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# Black vulture in Pyrenees

*Reintroduction program*

Boumort-Alinyà

2007-2013

GREFA, February 27th of 2014



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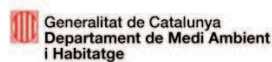
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Cover photo: Black vulture fighting against Griffon vulture in a PAS (Photo: Bruno Berthemey).

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Mario flying (photo: Marc Gálvez).

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## 1. SUMMARY

### ***2013 has meant a great step forward for the black vulture in the Pyrenees***

In life, as in wines, there are good and bad years.

And 2013 can be considered a happy year for the black vulture reintroduction in the Pyrenees project.

Figures sing: the season ends with a 50% increase in the number of individuals in the colony, as well as in the number of fledglings. And a 40% increase in the number of couples formed.

In other words, by 31 December 2013, the colony of Boumort-Alinyà is already composed of seven pairs from around thirty members in total. Five of the six chicks remain in the enclave /area. And from them, GALA, the female with the gift of being the first black vulture chick born in freedom in the Pyrenees since more than one hundred years, will reach her sexual maturity in the next spring; this will enable her to mate and start in this way a second generation. The three chicks born in 2013 (MIM,BIC and PIP) have successfully completed their dependence period and are now flying in the sky above those mountains together with the rest of the colony members. And if that were not enough, this incipient core has been able to recruit four exogenous black vultures, two of French origin and two Iberian, which highlights the importance of the project in establishing a connection bridge between isolated populations and the recovery of the traditional distribution area of the species in Europe.

Throughout the year 2013 eight individuals have been released: seven of them in Boumort and one in Alinyà. From them six have integrated in the colony, which implies 75% efficiency. As the general mortality rates have remained low, around 10%, the result is a net balance at the end of the year of ten black vultures aggregated to the colony.

If we manage to keep this rhythm of demographic increase in the next two seasons, the size of fifty individuals could be reached, considered the minimal viable population. In this sense, we would like to emphasize the essential role played by Regional Governments as collaborating institutions in the project, through the cession of black vultures interned in their official Recovery Centers. Once more, we would like to thank Extremadura, Andalucía, Valencia, Murcia, Asturias and Castilla-La Mancha for their courageous support in favor of the common European biodiversity and heritage.

Table 1. Data of the colony of Boumort-Alinyá (Authors: Aleix Millet/Mario Álvarez).

Data	No. of individuals
Released individuals	46
Stabilized individuals (actual colony)	30
Dead/Unrecoverable	18
Disappeared/In dispersion	9
No. couples	7
No. born chicks	9
No. fledglings	6
Movements to SW (Peninsula)	9 at least
Movements to NE (France)	9 at least
French visitors	23
Iberian visitors	45 at least

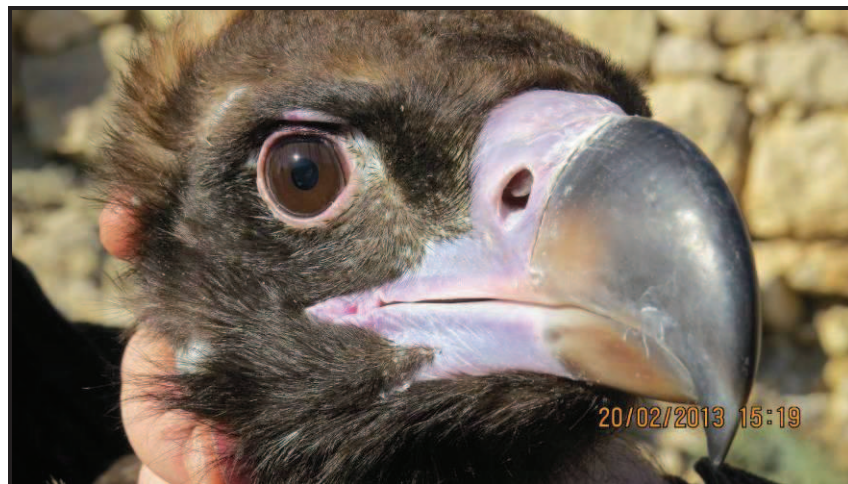


Fig.1. Pouet at tagging day (Photo: Ernesto Álvarez).

## 2. COLONY STRUCTURE

### *The Pyrenean population is composed of approximately thirty individuals*

By the 31<sup>st</sup> December 2013, the black vulture reproductive colony in the pre-Pyrenees of Lleida (Boumort RNC and Alinyà Natura Space) is composed of 30 individuals.

From them 13 are females and 17 males. The gender adscription of two of the individuals is provisional as they are exogenous black vultures of French origin, which have not been sexed nor reached the age to pair up.

Dividing by age classes we find 6 juvenile (3 females and 3 males), 10 sub-adults (2 females and 8 males) and 14 adults (8 females and 6 males). We notice a structural imbalance in ages (inverted pyramid) as well as in gender (imbalance males-females in the juvenile and adult fractions).

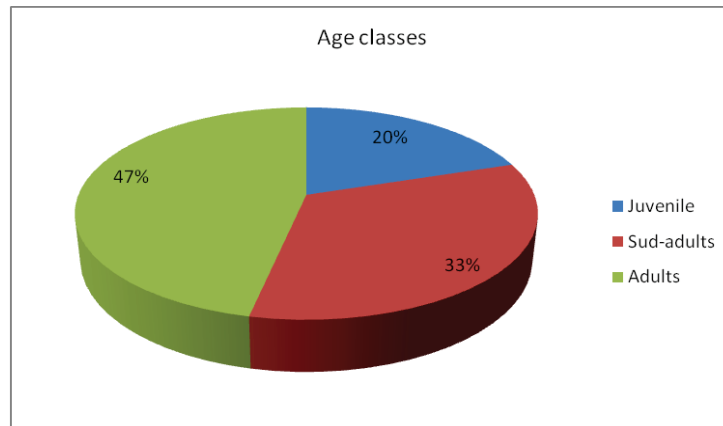


Fig.2. Age classes of the colony (n=30) (Authors: Aleix Millet/Mario Álvarez).

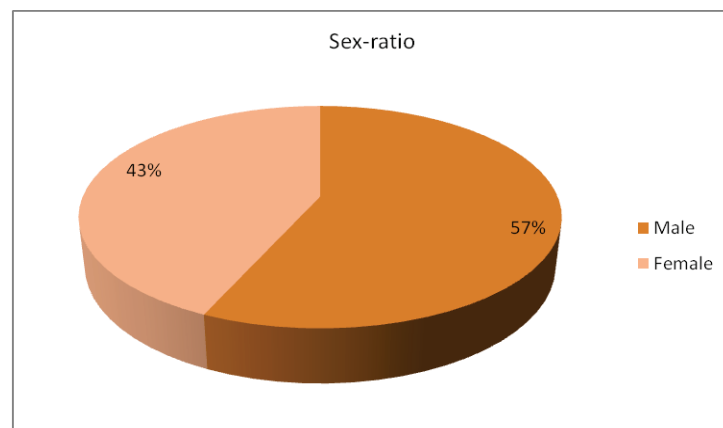


Fig.3. Sex-ratio of the colony (n=30) (Authors: Aleix Millet/Mario Álvarez).

*Note: It is striking to notice how during the first years of the project development (2008-2011) there was a very strong bias in favor of the females, mostly due to a higher mortality of the males. This sex related bias has been however wiped away in 2012 and reappeared, but with opposite sign, in 2013 due to a dominating masculine gender among the new released individuals and to a mortality rate that has affected principally the females.*

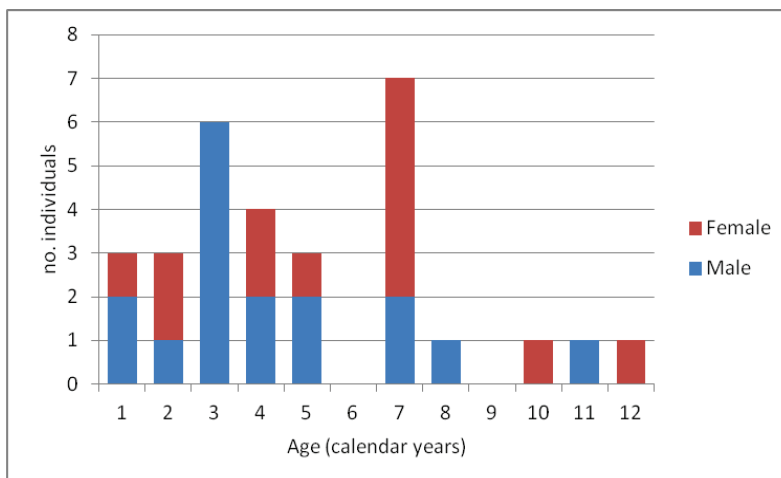


Fig.4. Relation by age and sex of individuals composing the colony (n=30) (Authors: Aleix Millet/Mario Álvarez).

### 3. PAIRS FORMED

#### *There are 7 pairs constituted in the colony*

Throughout the year 2013, to the 5 preexisting pairs (Perla+Portell, Menta+Mario, Bruna+Corneli, Neus+Oriol and Olga+Aleix) 2 new more have been added (Ibex+Ares and Gallarda+Modesto) coinciding with the autumn prenuptial activity.

The pair Neus+Oriol was lost at the end of the season due to the death of the female. But it was reestablished in a few days as the pair formed by Pessonada+Oriol, leaving the final balance with 7 pairs and a 40% increase towards 2012.

As a positive data we can boast the constitution of the first mixed pair between an individual of our program (Ares) and another Iberian exogenous (Ibex). This pair replaces the one previously formed in the spring by Ares and Aiguaneix, which gradually disintegrated along the summer. This kind of temporary unions are difficult to detect in the absence of such an exhaustive and individualized monitoring as the one we carry out in our Pyrenean project.

On the other hand it is necessary to remember that at the end of 2012, Oriol and Nouanda formed for the first time a mixed union between a Pyrenean black vulture and a French one. But it also dissolved in an unexplainable way just at the beginning of the next reproductive cycle: Nouanda went back to France and she was almost immediately replaced by Neus.

The negative point is the loss of Neus, an adult female whose exceptional characteristics as an adoptive mother made possible that one of the chicks born this year (Mim), managed to fly and further to incorporate in the colony.

Perla and Portell are undoubtedly the cornerstone of the colony because they have bred uninterruptedly since 2010 (4 seasons in a row) making possible that 3 of their born chicks (Gala, Coma and Pip) could fly.

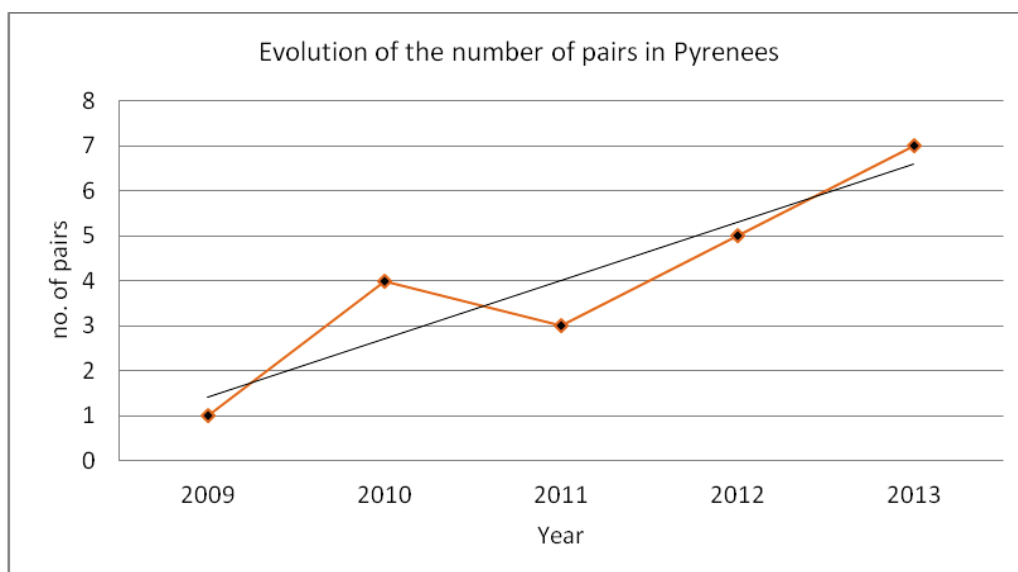


Fig.5. Evolution of the number of couples formed in the colony throughout the project (Authors: Aleix Millet/Mario Álvarez).



## 4. REPRODUCTION

### *2013 concludes with 3 born and flown chicks*

This breeding season is characterized by a noticeable increase in the number of reproductive pairs (five against the three of last year). As well as a great reproductive success; all of born chicks (3) get flying. The global productivity has maintained a very similar value to the reference percentage in European colonies of this species (0.56).

From the five pairs that started incubation, three managed to accomplish the process (Perla+Portell, Menta+Mario and Bruna+Corneli) after 57, 56 and 62 incubation days respectively. We should highlight that in average it is happening one week earlier than normal, year after year, in the Pyrenean reproductive phenology, adjusting so to the earlier dates in the neighbor French colonies (Grands Causses and Baronnies).

The two remaining pairs (Olga+Aleix and Neus+ Oriol) lost their laying half way of the process, presumably due to crows attacks, who had been spotted in several occasions trying to chase the adults away from their nest. In the case of the first pair mentioned, the reproductive failure was detected with a three days delay, with the result of an unsuccessful attempt of stimulating the continuity of incubation through the setting of an artificial egg.



Fig.6. Bringing food into the nest of Bic; daughter of Bruna and Corneli  
(Photo: Lorena Juste).

However, in the case of the second pair it was possible to achieve success in a complex replacing operation. This allowed on one hand that Neus and Oriol continued incubating an artificial egg. And on the other hand Mim, the chick of Menta and Mario, who had to be rescued after verifying that his growing was endangered due to malnutrition, ended happily his development with Neus and Oriol as adoptive parents. To achieve this, we had to introduce in between a Griffon vulture chick, born in captivity, until the complete rehabilitation of Mim in the CR of Vallcalent. This process constitutes a pioneer milestone in adoption and cross-

fostering and can obtain very good results for the insertion of chicks born in captivity as an alternative way to hacking, using as nursing parents those pairs who failed in their incubation.

Table 2. Results of productivity of the colony throughout the project (Authors: Aleix Millet/Mario Álvarez).

Year	Breeding pairs	No. of fledglings	Productivity rate
2010	1	1	1
2011	4	0	0
2012	3	2	0,66
2013	5	3	0,6
		Xm= 1,5	Xm= 0,56

For the second year in a row, Muga, an unpaired female, laid a presumably non fecundated egg and initiated its incubation. But she lost it, as expected, in one of her unavoidable flights to search for food. In this case we observed crows parasitizing the nest and devouring the content of her egg.

For the marking of the 3 born chicks we counted with the technical assistance of the MAGRMA specialist Victor Garcia. The two first ones (Pip and Mim) were provided with a GPS transmitter and a terrestrial one, as backpack by a teflon harness, at the respective ages of 79 and 78 days. The third one was provided with only one GPS device at the age of 84 days.

Bic received supplementary food directly in the nest by means of a telescopic pole, between his 90 and 100 days of age. We had noticed that Bruna, the female, ignored her motherly obligations and Corneli alone was not able to satisfy the hunger of the chick.

Table 3. Data of the born chicks in 2013 (Authors: Aleix Millet/Mario Álvarez).

Name	Tagging date (DD/MM/YY)	Age (days)	Weight (Kg)	Sex	GPS	VHF	PVC	Born date	Fly date
<b>Perla &amp; Portell</b>	20/06/13	79	7,0	Male	Yes	Yes	<b>E46</b> Blue (left tarsus)	3/4/13 (57 days inc.)	6/8/13 (125 days)
<b>Menta &amp; Mario</b>	20/06/13	78	6,4	Male	Yes	Yes	<b>E45</b> Blue (right tarsus)	4/4/13 (56 days inc.)	11/8/13 (130 days)
<b>Bruna &amp; Corneli</b>	17/07/13	84	8,5	Female	Yes	No	<b>MPO</b> Yellow (left tarsus)	25/4/13 (62 days inc.)	12/8/13 (110 days)

*Note: We wish to highlight the reproductive success of Comí, a male released in Boumort in 2011 who dispersed rapidly after the release, and who later settled in the Avila mountain range limiting with Madrid. He paired the following year with a female without identification signs, and at their first trial they have managed to breed a chicken that, by 31 December 2013 is still living in his native area. The detection of such a relevant fact, as well as of other similar ones, would have been almost impossible without the GPS transmitter carried by most of the individuals, which have been financed by REE (Red Eléctrica de España).*

## 5. RELEASES

### **8 individuals have been released between Boumort and Alinyà**

This season 8 black vultures have been released, 7 in Boumort and 1 in Alinyà, coming from Recovery Centers (CR) in Extremadura, Asturias, Valencia and Castilla-La Mancha. Five of which are males and 2 females, all of them subadult individuals of a 3<sup>rd</sup> or 4<sup>th</sup> calendar year, equipped with plastic rings and backpack GPS transmitters by teflon harness. For tagging we have been assisted as in previous years by Victor García (MAGRAMA). The individuals had remained in their respective acclimatization enclosures from 6 to 12 months.

The release dates were the 1<sup>st</sup> March (Boumort) and 9<sup>th</sup> September (Alinyà)

Since the beginning of the program in 2007, 46 individuals have been released, from which 31 in Boumort (67%) and 15 in Alinyà (33%).

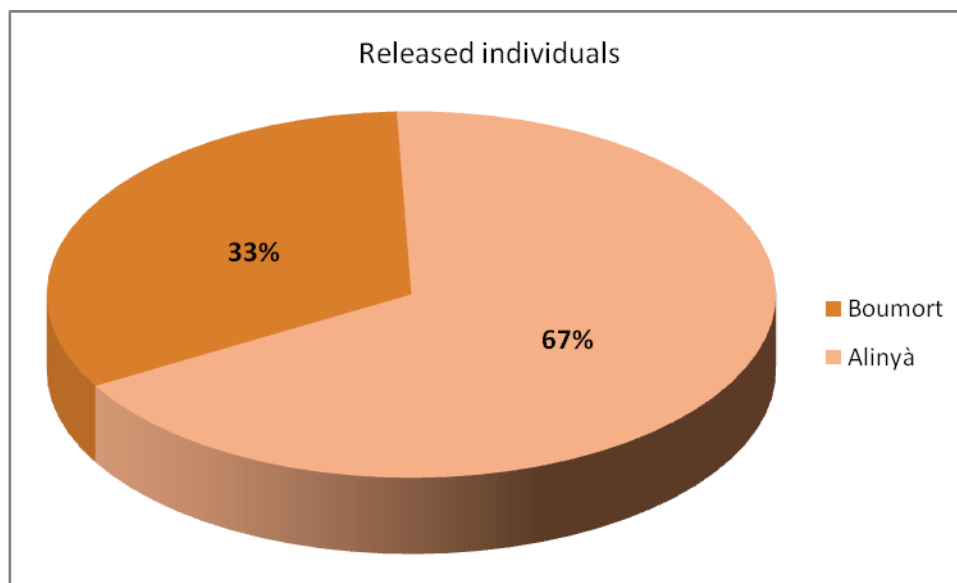


Fig.7 Released individuals. Percentages of released individuals from release site (n=46) (Authors: Aleix Millet/Mario Álvarez).

The two females initiated their dispersion after a few days, unfortunately one of them (Trenca) died in a wind farm near Lugo (Galicia), where she had sedimented (stayed) due to bad visibility and the other one (Grefa) was run over in a rural road near an intensive cattle plant in Zaragoza.

On the other hand the 6 males (Hornos, Pouet, Foix, Saler, Grévol and Trasgu) have preferred to settle in the reintroduction area and they have not flown further than 50 km away from Boumort-Alinyà.

From the start of the program the data of the carried out releases are shown in the next diagram.

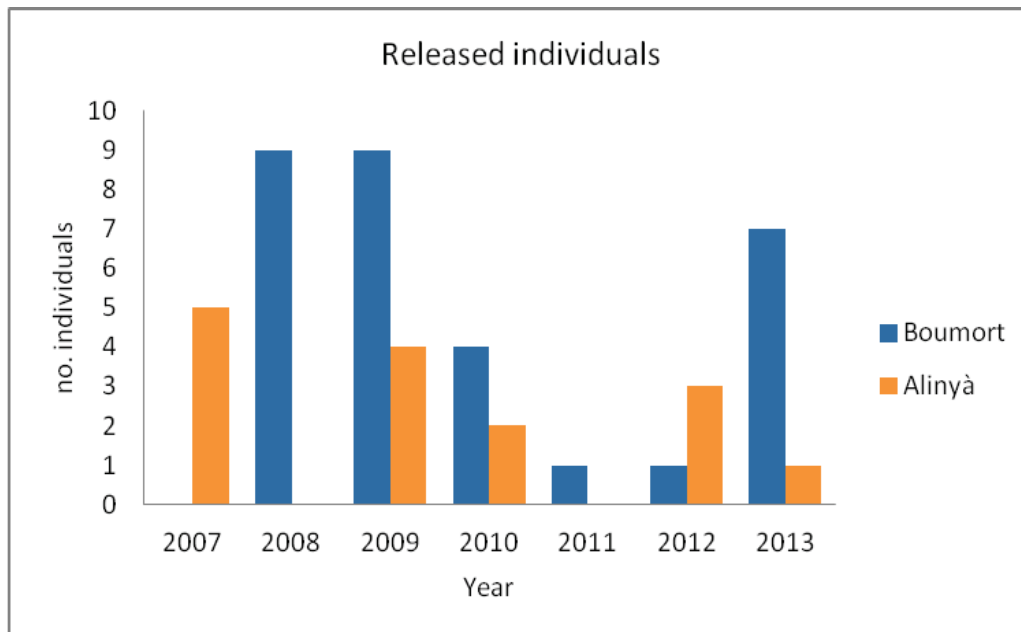


Fig.8 Number of released individuals (per year and site) throughout the project (Authors: Aleix Millet/Mario Álvarez).



Fig.9 Staff on a break during the labors of tagging and veterinary exploration of the individuals released in 2013 (Photo: Ernesto Álvarez).

## 6. FEEDING

### *The Specific Feeding Point (SFP) is essential for the colony*

As it had already been shown in previous years in a reiterative way the feeding plays a crucial role in the demographic dynamic of the colony. The dilemma is how to provide a good nutritional supply for the black vultures in competition with a dense population of Griffon vultures, who, by number, physical and strategic reasons monopolize the corpses, especially when these are big and forming heaps on the ground.

This is the reason why we decided to do, already in previous years, sporadic supplies in front of the acclimatization cage, which allowed at the same time for socialization with the individuals who were inside it. And in 2013 the procedure has been improved in order to benefit as much as possible the black vultures, the method consists in spreading around at early morning hours small amounts of food cut in pieces.

We have achieved in this way that the rate black vultures against griffon vultures oscillates around 1:2-1:3, much better than the usual rate at the current feeding place in Boumort, where it oscillates between 1:20 and 1:30.

*Note: TRENCA has set up a net of Specific Feeding Points (SFP) around the reintroduction area, 3 in total, which will contribute in the future to minimize the exposure of the vulture colony to the toxic products found in the dumping sites of the area.*



Fig.10 Black vultures in the SFP activated in front of the acclimatization cage in Boumort (Photo: automatic camera).

## 7. MONITORING

### *The GPS transmitters facilitate relevant information for the project*

For the monitoring of the colony individuals GREFA has hired, as in 2008, 2009, 2010 and 2012, a person on a full time basis (Mario Alvarez)

The task is to control the daily activity of the black vultures, both endogenous and exogenous. For that purpose we prioritize the direct observation as an information source, at real time, about the presence in the area and the apparent health condition of the individuals. The opportunities that allow us to gather this information coincide mostly with the food supply happening at the feeding places of Boumort and surroundings.

In a complementary way, to document the itineraries performed and in the case being, the detection of mortality points, we use the periodical downloading of the GPS devices, financed by REE.

Of the 30 individuals composing the Pyrenean colony by 31.12.2013, 20 (66%) were born or released in Boumort, 6 were released in Alinyà (20%) and the rest are exogenous of Iberian or French origin (2 and 2 respectively).

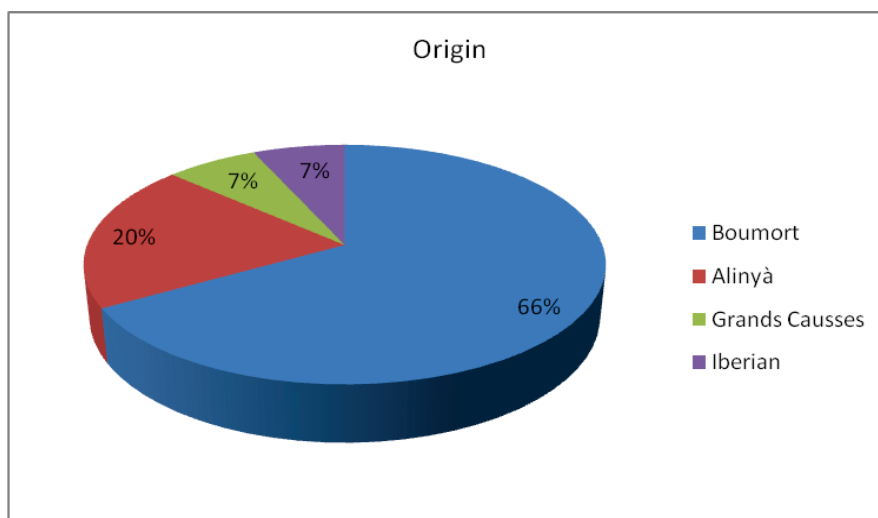


Fig.11 Origin of individuals composing the colony (n=30) (Authors: Aleix Millet/Mario Álvarez).

From the direct and indirect monitoring performed this year, we can pull out two main conclusions. Firstly, regarding the released individuals and born this year, the presence of feeding sources near the colony play a key role in reducing the dispersion tendencies and minimizing the losses due to non natural mortality. Secondly and reinforcing the previous issue, the correct management of some of the neighbour feeding places, has facilitated that individuals such as Gata and Gallarda have preferred to sediment in the reintroduction area after a long dispersive phase/long distance nomads.

As an anecdote of the capacity of shifting and of the wandering tendencies, characteristic of the species, mainly during the spring and summer months, we can

review the round trip to the surroundings of Paris that Gala performed in a bit more than one week.

Throughout this year the average of individuals observed and identified daily has been 17. The highest number of black vultures seen in one single day was 33. There were days when it was possible to control all the individuals of the colony.

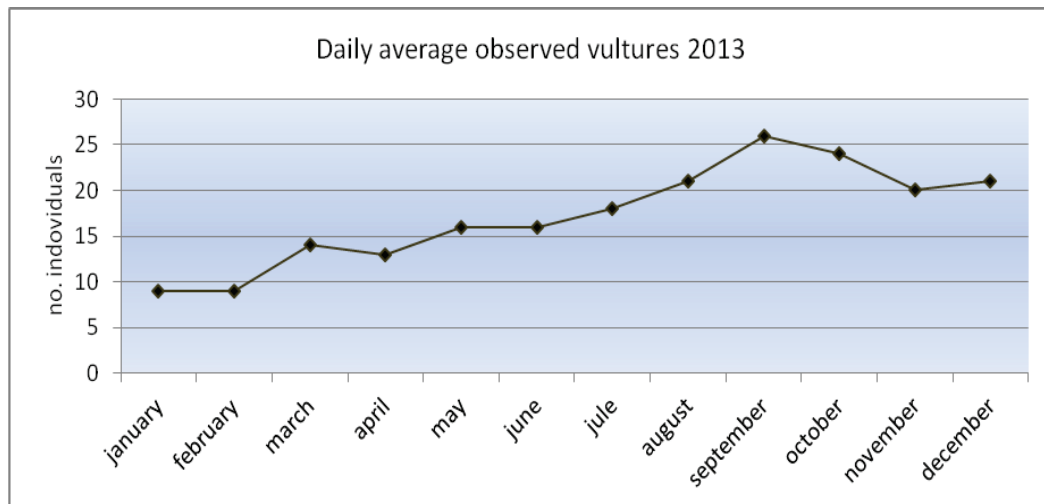


Fig. 12. Daily average of individuals observed in the colony throughout 2013 (Authors: Aleix Millet/Mario Álvarez).



Fig. 13. Accumulative movements of black vultures tagged with GPS transmitter in 2013 (image performed by Juan Pablo Díaz).

Table 4. Origin of individuals comprising the colony of Boumort-Alinyà in 2013 (Authors: Aleix Millet/Mario Álvarez) – *More information in Annex I.*

Boumort		Alinyà	Grands Causes	Iberian
Corneli	Saler	Perla	Quercy	Ibex
Pessonada	Hornos	Portell	Quasimodo	Neo
Menta	Grèvol	Bruna		
Mario	Foix	Aleix		
Gallarda	Pouet	Ares		
Gata	Gala	Trasgu		
Modesto	Coma			
Oriol	Mim			
Muga	Pip			
Olga	Bic			

Released      Born in colony      Visitors

*Note: During the reproduction cycle, TRENCA hired a reinforcing person (Lorena Juste) with the goal of exhaustively monitoring the incubation and breeding the new born chicks process. Thanks to her help it was possible to carry out both Mim rescue and the supplementary feeding of Bic, among other crucial tasks.*

## 8. TAGGING

### **Victor García, the Environment Ministry expert, performs an invaluable task**

The percentage of marked individuals since the start of the program and the type of the corresponding sender are related in the diagram below.

In other words, a total of 51 black vultures have been equipped with transmitters, all of them released or born inside the frame of this project. From them, 32 provided with a satellite GPS transmitter, 15 with VHF transmitter fixed on the back and 4 with VHF transmitters fixed to tail feathers. An additional individual was released without any kind of transmitter.

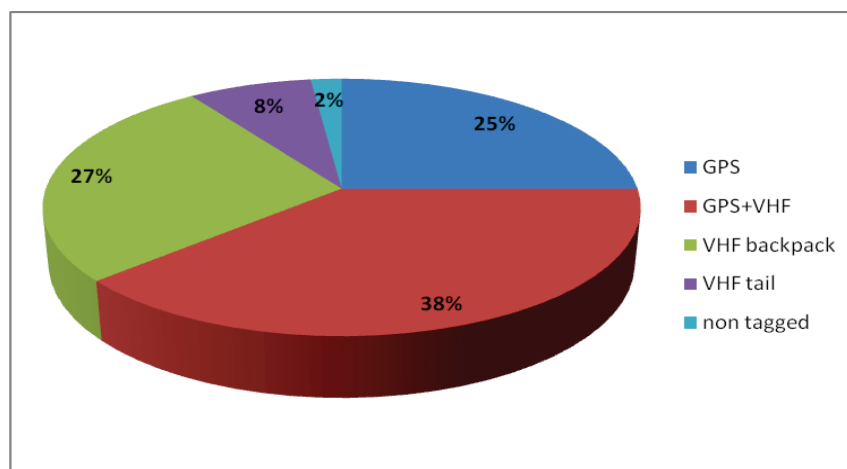


Fig.14 Transmitters types used for the tagging of individuals released and born in the colony throughout the project. (Authors: Aleix Millet/Mario Álvarez).



From all of them, currently there are:

- 1 black vulture with active VHF transmitter, a milestone after almost six years of uninterrupted functioning.
- 12 with active GPS transmitter.
- 4 with active GPS + VHF transmitter.
- 1 with inactive GPS transmitter.
- 1 with inactive VHF transmitter.
- 11 who have lost their transmitter or have never carried one.



Fig.15 Tagging of Mim, the son of Menta and Mario (Photo: Ernesto Álvarez).

*Note: Comí, emigrated from the colony and installed as reproductive in Ávila, also carries GPS transmitter.*

## 9. SUMMER AND WINTER VISITORS

### ***The visits of exogenous black vultures keep growing***

2013 signals an inflexion point in the detected trends about the appearance of exogenous black vultures. And it speaks conclusively about the strategic role of Boumort-Alinyà as a dynamic agent in the flow of individuals along the SW-NE corridor connecting the Iberian colonies of this species with the new ones being created in France thanks to equivalent reintroduction projects.

The point is that for the first time the sedimentation of foreign visitors has stopped being a circumstantial phenomenon closely linked to the seasons, to become a daily fact. This has allowed mixed pairs between exogenous and endogenous individuals to be formed.

In any case, it is noticeable the grouping of Iberian individuals arrivals around the months of spring-summer and of the French individuals in autumn-winter.

In total, this year the area has been visited by 11 individuals of French origin (10 born in Grands Causses and 1 born in Baronnies). And *circa* 17 of Iberian origin, most of them (except for two) without any type of bands or individual identification marks. The two marked ones were black vultures from the colonies in Rascafría and Valdemaqueda.

As a total amount from the start of the program around 70 exogenous black vultures have been spotted in the Pyrenean reintroduction area.



Fig.16 Visitors observed in the colony since the start of the Project - 2008 to 2013 (Authors: Aleix Millet/Mario Álvarez).

The number of foreign individuals daily observations has been growing exponentially, as well as the average duration of the stays. The highest number of exogenous black vultures being simultaneously present at the same point has been of 7 this year.

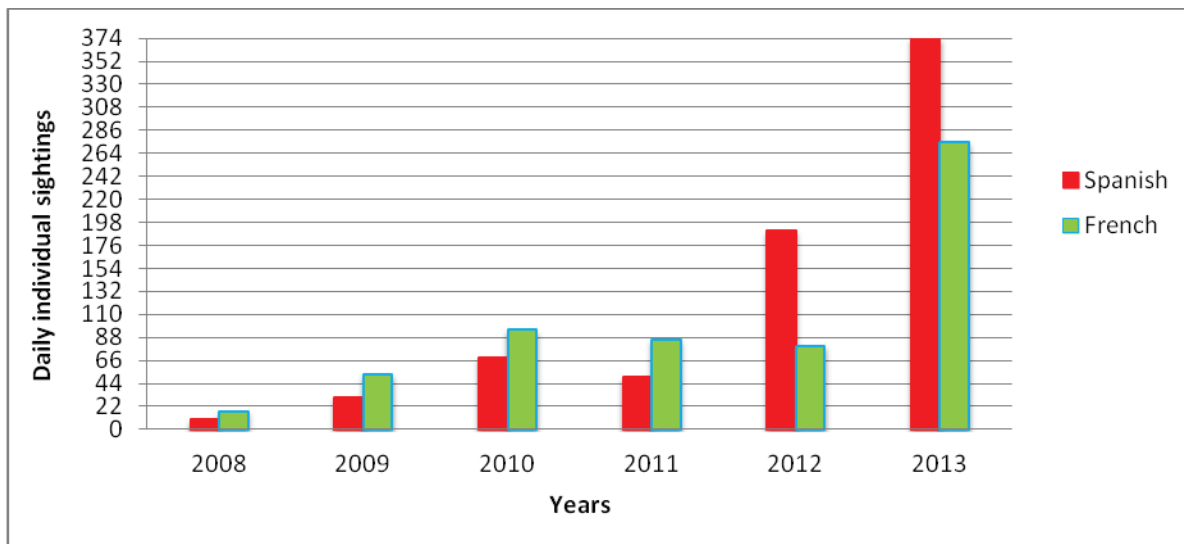


Fig. 17. Daily visitors sightings on Boumort-Alinyà colony (Authors: Aleix Millet/Mario Álvarez).



Fig.18 Quasimodo, an exogenous black vulture born in Grands Causses in 2012 that has joined the Pyrenean colony (Photo: automatic camera).

## 10. MORTALITY

### *The mortality rate stays in low figures*

In species with such low reproductive rates as in the black vulture, a rise in the mortality can provoke the collapse of reduced populations such as the Pyrenean one.

Considering the mortality rate as the quotient between the deceased individuals and the total of individuals who are present in the colony at the end of each natural year, we can state how after the mortality peaks that affected the core reintroduced in the years 2008 and 2011, the tendency shows a remarkable decrease, and in the last years it has remained with an acceptable value of 10%.

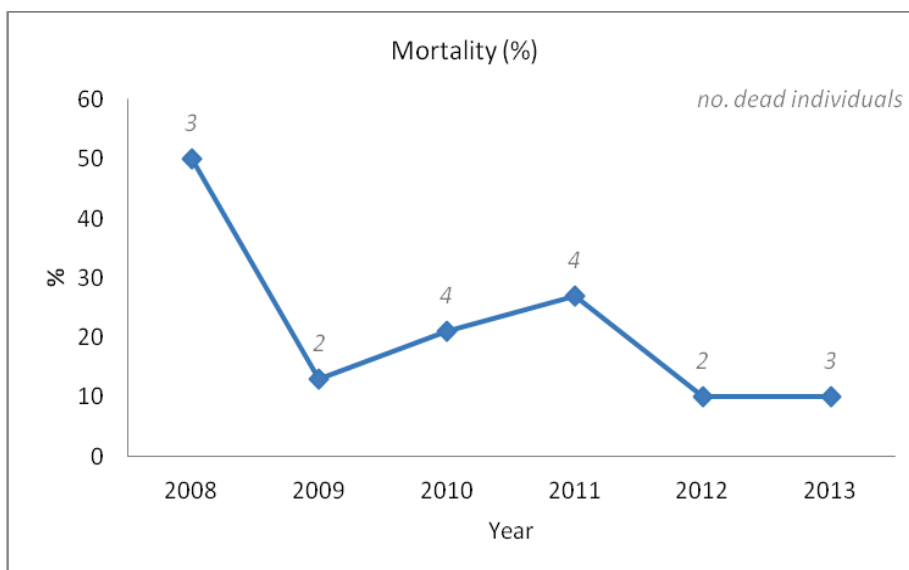
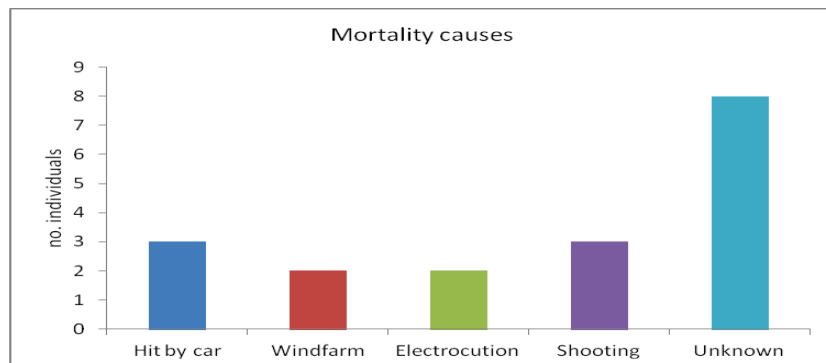


Fig.19 Evolution of the mortality rate (Authors: Aleix Millet / Mario Álvarez).

What is really worrying is the fact that year after year new mortality episodes appear, affecting adult individuals, and what is worse, already in pairs. It has not been possible to identify the cause of the deceases despite the effort performed in the necropsies and in the reference official toxicology laboratory (IREC). All the more since these black vultures were in good health and were suddenly found dead, as it happened at the end of 2013 with Neus.

As it is shown in the historic diagram below the highest death percentage is attributed to non clarified causes.

Fig.20 Mortality causes (total individuals dead throughout the project) (Authors: Aleix Millet/Mario Álvarez).



## 11. SPECIAL ACTIONS

### *Around ten artificial nests have been installed*

We have continued the task initiated in the previous years of building and accommodating artificial nesting platforms.

In total in 2013 10 actions of this type have been carried out, of which 6 in Alinyà, 3 in the periphery of Boumort and 1 in Boumort.

The purpose of it is to facilitate the expansion towards the N and E of the current colony, allowing for the earlier settlement of novice pairs and their nesting under structural safety conditions.



Fig. 21. Final touch in one of the platforms built this year in Alinyà (Photo: Aleix Millet).

The benefits of these actions are confirmed by the following data: from a total of 13 controlled reproductions between 2010 and 2013, in 7 occasions (54%) the support chosen by the respective territorial pairs was an artificial nest. Adding the two attempts of breeding by the same single female (Muga) in 2012 and 2013 the

figure would reach a 60%. And if we consider only the first attempts of reproduction the percentage would be 83%, counting the pairs alone. And of 86% if we include Muga, which clearly shows the high attraction these structures have for the colony individuals, especially for the most inexperienced ones.

The orientations are in general exposed towards south, as these are preferred by a photo-dependant and heliophilous species such as the black vulture. As a support we have chosen good size *pinus nigra* since the reliability and resistance of the base minimize the risk of nest collapse.



Fig. 22. Recently finished platform on a huge *pinus nigra* in the periphery of Boumort (Photo: Fulvio Genero).

## 12. CONCLUSION

***In the next two years it will be possible to reach a viable population***

If the 2012 and 2013 rhythm of demographic grow is kept at the end of 2015 the threshold of the minimum size population would be reached, set in 50 individuals.

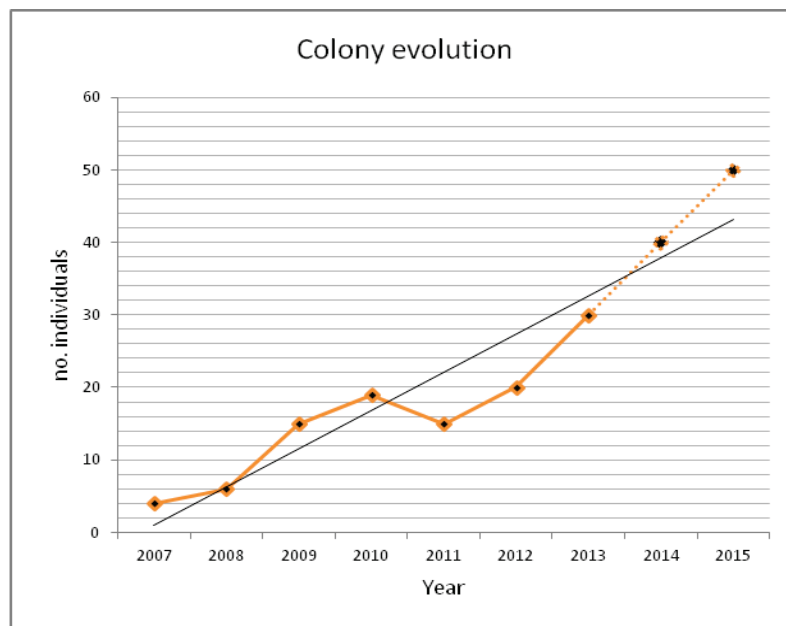


Fig. 23. Evolution of the stable number of individuals in the colony (Authors: Aleix Millet/Mario Álvarez).

To achieve this it is necessary to continue with the work guidelines that have proven more efficient, to improve those which are not yet such and to make society aware of the huge personal and organizational effort that has made possible the recovery of an extinct species, the black vulture, in Catalonia. With it the set of the four big scavenger species living in the European continent is completed: the Bearded, the Black, the Griffon and the Egyptian vultures.



Fig. 24. The four exclusive scavenger species that live in the European continent: Bearded vulture, Black vulture, Griffon vulture and Egyptian vulture (Photo: Mario Alvarez).

The simultaneous observation/watching of these four species feeding and reproducing in the same area is a privilege to be enjoyed currently only in the pre-Pyrenees of Lleida thanks to this project.

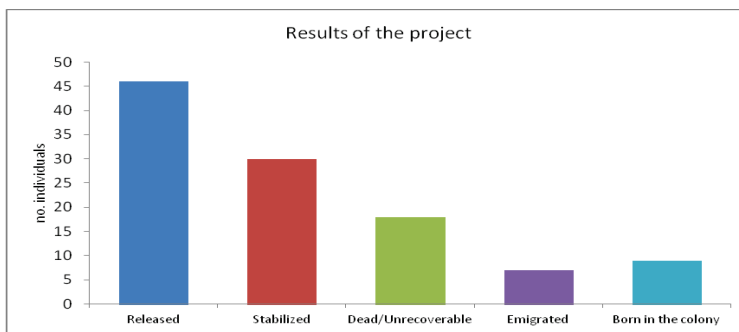


Fig. 25. Results about released and born individuals (2008-2013) (Authors: Aleix Millet/Mario Álvarez).

Fig. 26. General data of the Project. Colony evolution (Authors: Aleix Millet/Mario Álvarez).

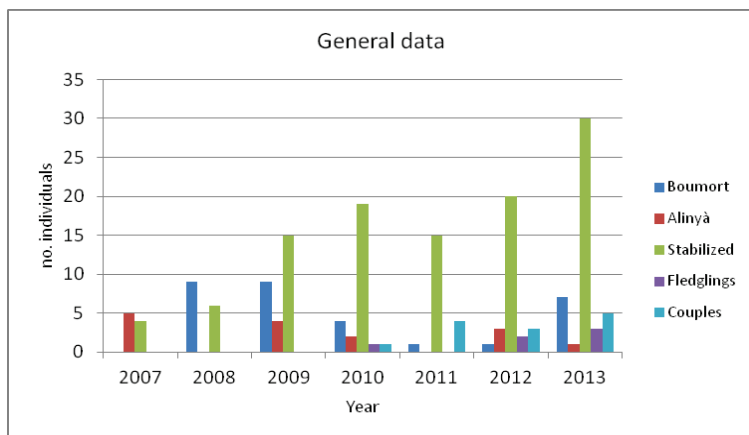




Fig. 27. Boumort-Alinyà's field team at work (Photo: Aleix Millet).

## ANNEX I. LIST OF THE INDIVIDUALS COMPOSING THE BOUMORT-ALINYÀ COLONY 2013

TABLE I. Individuals from Boumort (individuals born in the colony in green).

NAME	SEX	BIRTH DATE	TRANSMITTER TYPE	ID (GPS)	PVC	RING	Release date
CORNELI	M	2004	VHF	-	AM[8R6]*	1106133	31/03/2008
PESSONADA	H	2004	VHF*	-	AM[79C]	1106130	31/03/2008
MARIO	M	2007	VHF*	-	AM[8RC]	1107247	06/03/2009
MODESTO	M	2007	GPS+VHF*	<b>68280</b>	AM[8RA]	1107245	06/03/2009
GALLARDA	H	2007	GPS	<b>91031</b>	AM[8PP]	1107772	17/03/2009
GATA	H	2007	GPS	<b>91034</b>	AM[8R7]	1107243	17/03/2009
MUGA	H	2007	GPS	<b>91032</b>	AM[8PV]	1107573	17/03/2009
MENTA	H	2007	GPS*	<b>91035</b>	AM[8R4]	1107244	17/03/2009
OLGA	H	2008	GPS+VHF*	<b>68276</b>	AM[9WP]	1108810	24/09/2010
ORIOI	H	2009	GPS+VHF*	<b>68281</b>	AM[9WJ]	1108808	24/09/2010
HORNOS	M	2011	GPS+VHF	<b>107942</b>	AM[9WR]	1108839	27/02/2013
FOIX	M	2011	GPS+VHF	<b>68275</b>	AM[9VT]	1107479	27/02/2013
POUET	M	2010	GPS+VHF*	<b>96047</b>	AM[9VX]	1110205	27/02/2013
GREVOL	M	2011	GPS*+VHF*	<b>57794</b>	AM[9WV]	1111313	27/02/2013
SALER	M	2011	GPS*+VHF*	<b>120075</b>	AM[9WL]	1110210	27/02/2013
GALA	H	2010	GPS+VHF*	<b>96414</b>	AM[9WX]	1109067	24/09/2010
COMA	H	2012	GPS*	<b>107940</b>	AM[9V7]	1109068	27/06/2012
MIM	M	2013	GPS+VHF	<b>107939</b>	A[E45]	-	20/06/2013
PIP	M	2013	GPS+VHF	<b>57794</b>	A[E46]	-	20/06/2013
BIC	H	2013	GPS	<b>78056</b>	AM[MP0]	ARANZADI J 1501	17/07/2013

\*Inactive or lost transmitter.

TABLE II. Individuals from Alinyà.

NAME	SEX	BIRTH DATE	TRANSMITTER TYPE	ID (GPS)	PVC	RING	Release date
PORTELL	M	2006	VHF*	-	AM[49A]*	1102431	19/10/2007
PERLA	H	2005	VHF*	-	AM[49R]*	1106791	31/10/2007
BRUNA	H	2007	GPS*	<b>91027</b>	AM[79F]	1107574	23/02/2009
ALEIX	M	2009	GPS+VHF	<b>68277</b>	AM[9W1]	1108831	30/09/2010
ARES	M	2010	GPS	<b>96416</b>	AM[9X4]	1110202	24/07/2012
TRASGU	M	2012	GPS+VHF	<b>91027</b>	AM[MR1]	1111969	09/09/2013

\*Emisor inactivo o perdido.

TABLE III. Individuals from other colonies.

NAME	PVC	BIRTH DATE	ORIGIN
QUERCY	FDT	2012	GRANDS CAUSSES (FR)
QUASIMODO	FDV	2012	GRANDS CAUSSES (FR)
IBEX	-	2010	IBERIAN
NEO	-	2011	IBERIAN



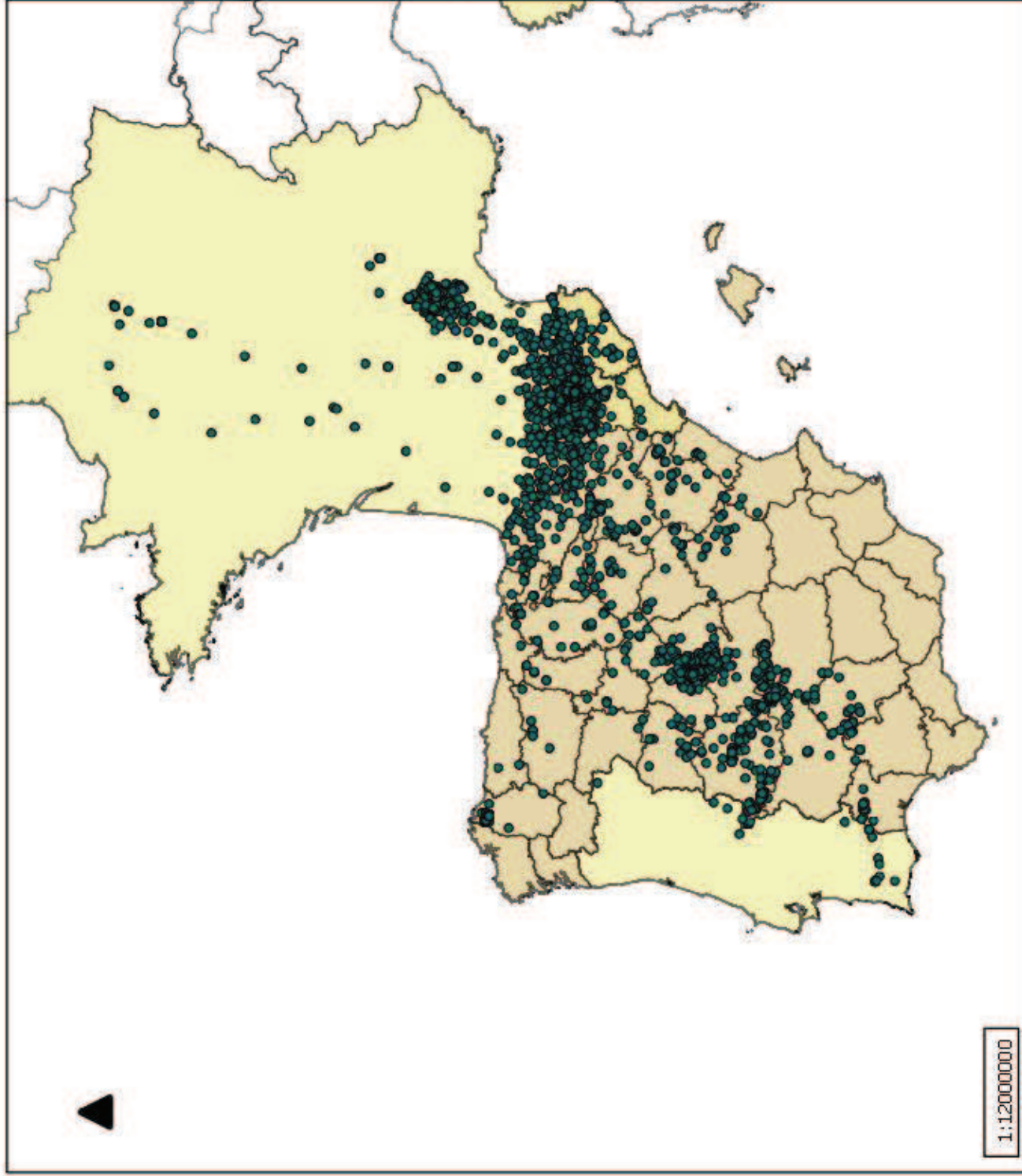
ANNEX II. GPS TRACKING 2013

Table. List of individuals tracked in 2013 (in alphabetical order).

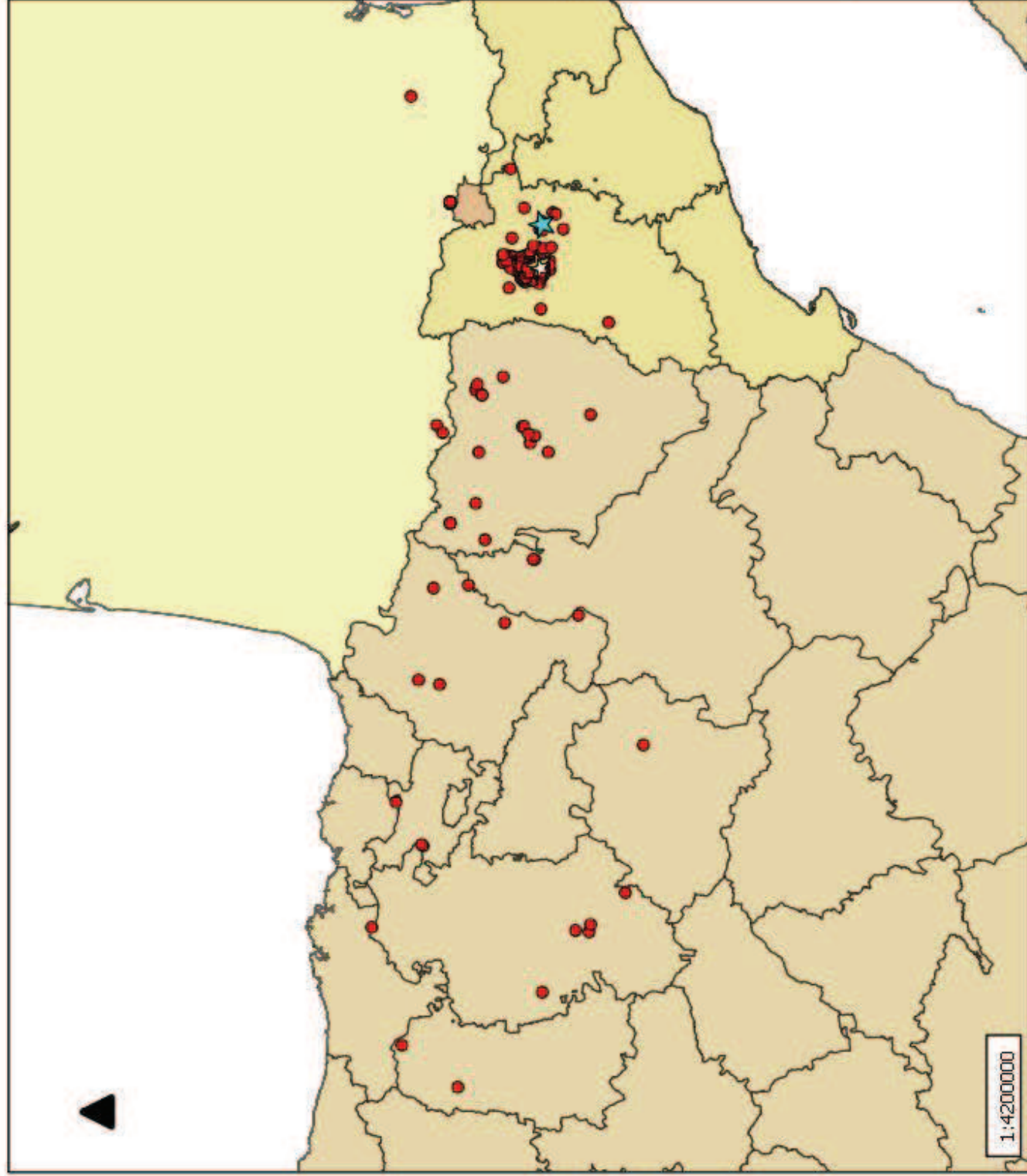
ID	Name	Sex	PVC	Release date	Resol.	Last data	Page.
68277	ALEIX	M	Y[9W1]	30/09/2010			III
96416	ARES	M	Y[9X4]	24/07/2012			IV
78056	BIC	F	Y[MP0]	17/07/2013			V
107940	COMA	F	Y[9V7]	27/06/2012	Trans. lost	02/05/2013	VI
107941	COMÍ	M	Y[6LX]	22/11/2011			VII
68275	FOIX	M	Y[9VT]	27/02/2013			VIII
96414	GALA	F	Y[9WX]	24/09/2010			IX
91031	GALLARDA	F	Y[8PP]	17/03/2009			X
91034	GATA	F	Y[8R7]	17/03/2009			XI
96046	GREFA	F	Y[9WM]	27/02/2013	Dead	01/04/2013	XII
57794	GREVOL	M	Y[9WV]	27/02/2013	Trans. lost	23/03/2013	XIII
107942	HORNOS	M	Y[9WR]	27/02/2013			XIV
91035	MENTA	F	Y[8R4]	17/03/2009	Trans. lost	18/08/2013	XV
107939	MIM	M	B[E45]	20/06/2013			XVI
68280	MODESTO	M	Y[8RA]	06/03/2009			XVII
91032	MUGA	F	Y[8PV]	17/03/2009			XVIII
68276	OLGA	F	Y[9WP]	24/09/2010			XIX
68281	ORIOI	F	Y[9WJ]	24/09/2010			XX
57794	PIP	M	B[E46]	20/06/2013			XXI
96047	POUET	M	Y[9VX]	27/02/2013			XXII
120075	SALER	M	Y[9WL]	27/02/2013	Trans. lost	21/03/2013	XXIII
91027	TRASGU	M	Y[MR1]	09/09/2013			XXIV
107939	TRENCA	F	Y[9W4]	27/02/2013	Dead	08/04/2013	XXV

Blue (shading); individuals with active transmitter throughout 2013.  
 Green; individuals which have lost transmitter but stables in the colony.  
 Red; individuals dead in 2013.

In the next page shown movements of all individuals throughout 2013.



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Proyecto de  
Reintroducción  
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Catalunya

2013

Nombre: ALEIX

Sex: Macho

Año nac: 2009

Origen: Madrid

Loc. Liberación: Alinya

Fecha lib: sep\_2010

ID(GPS): 68277

VHF(MHz): 147.823

PVC: AM[9W1]

Anilla: 1108831

ALEIX



Boumort



Alinya

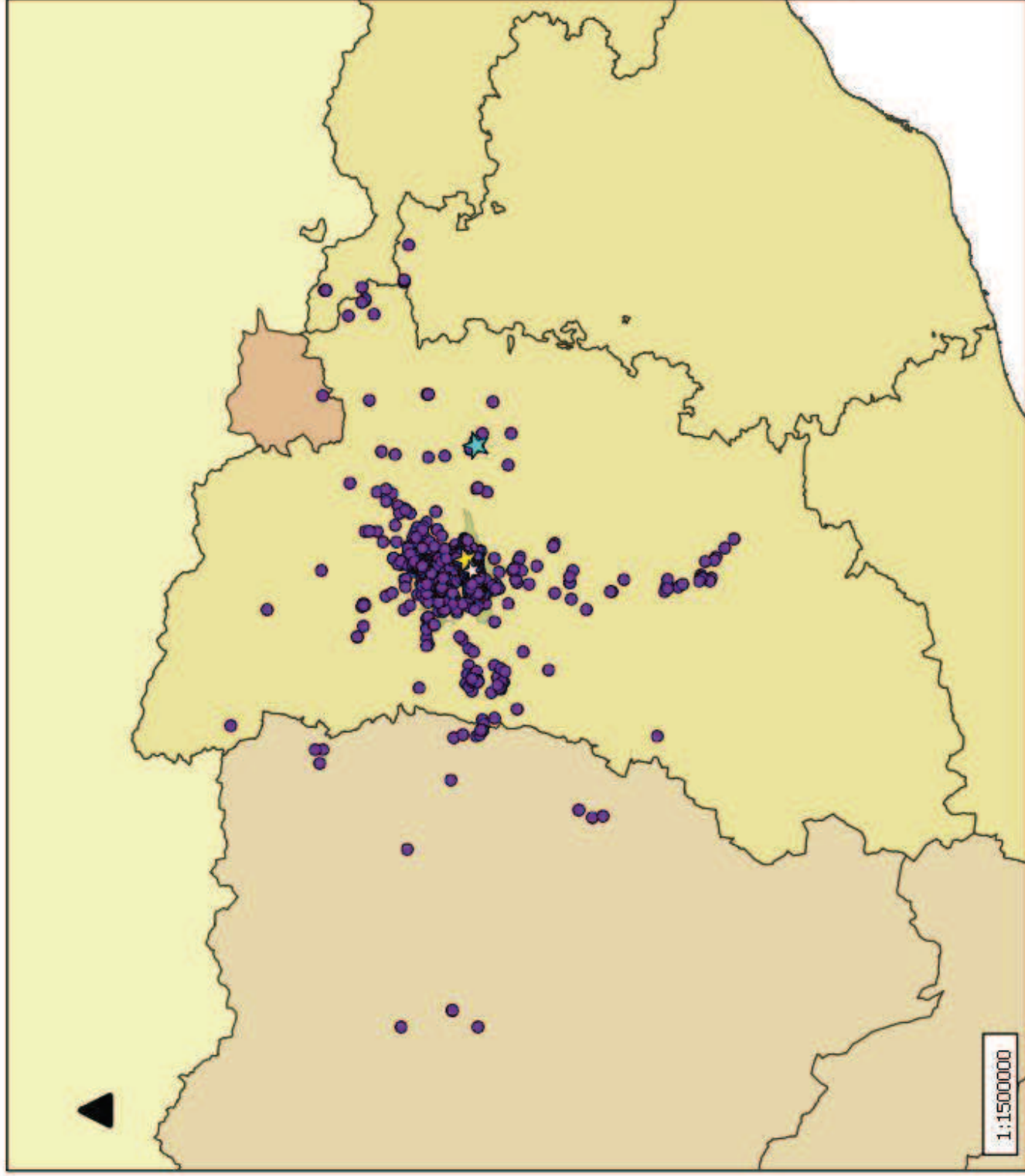


Cal Hortó



Proyecto financiado por:





Proyecto de  
Reintroducción  
del Buitre negro en  
Catalunya

2013

Nombre: ARES

Sex: Macho

Año nac: 2010

Origen: Extremadura

Loc. Liberación: Alinya

Fecha lib: jul\_2012

ID(GPS): 96416

VHF(MHz): -

PVC: AM[9X4]

Anilla: 1110202

ARES

Boumart

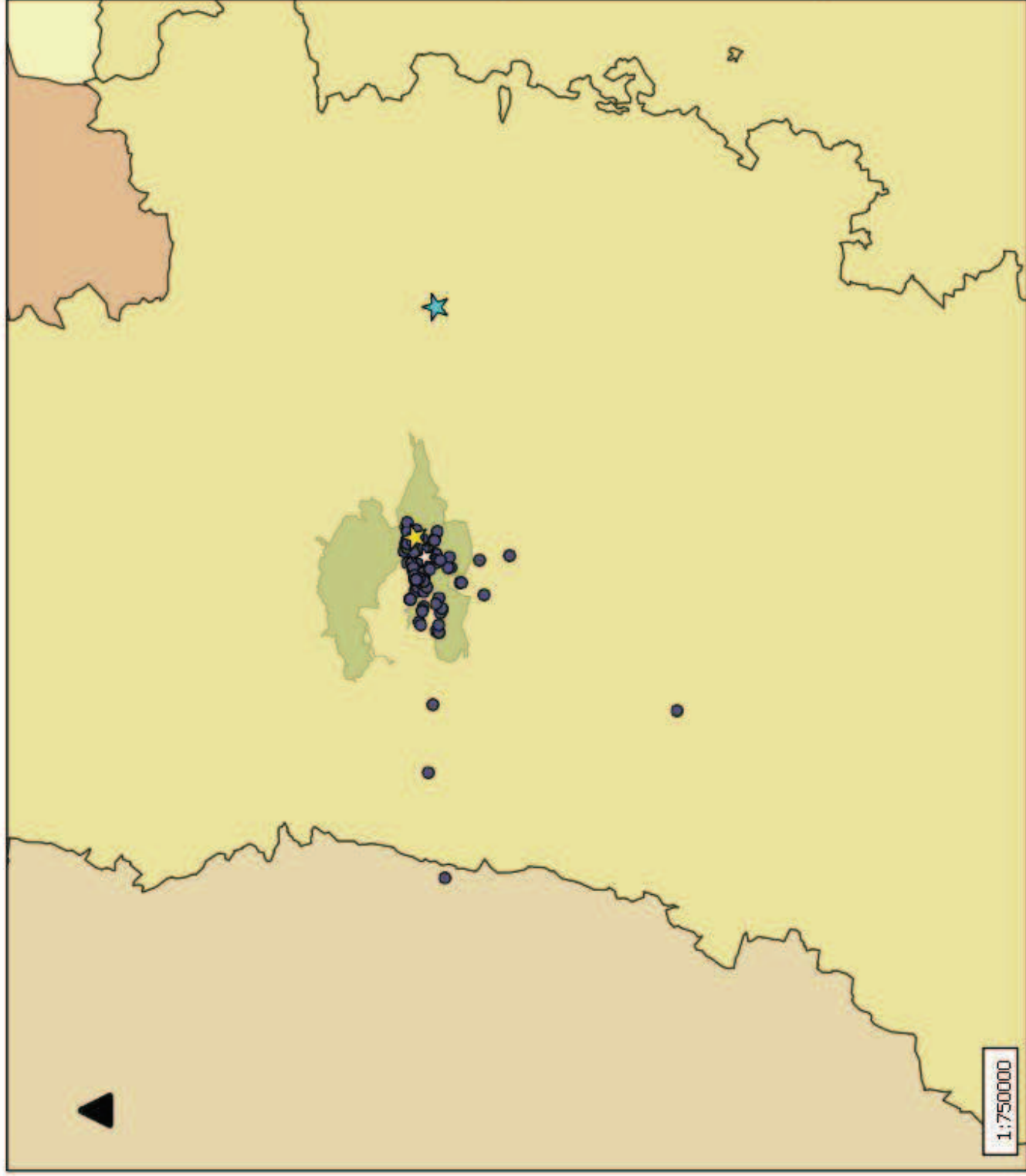
Alinya

Cal Hortó



Proyecto financiado por:



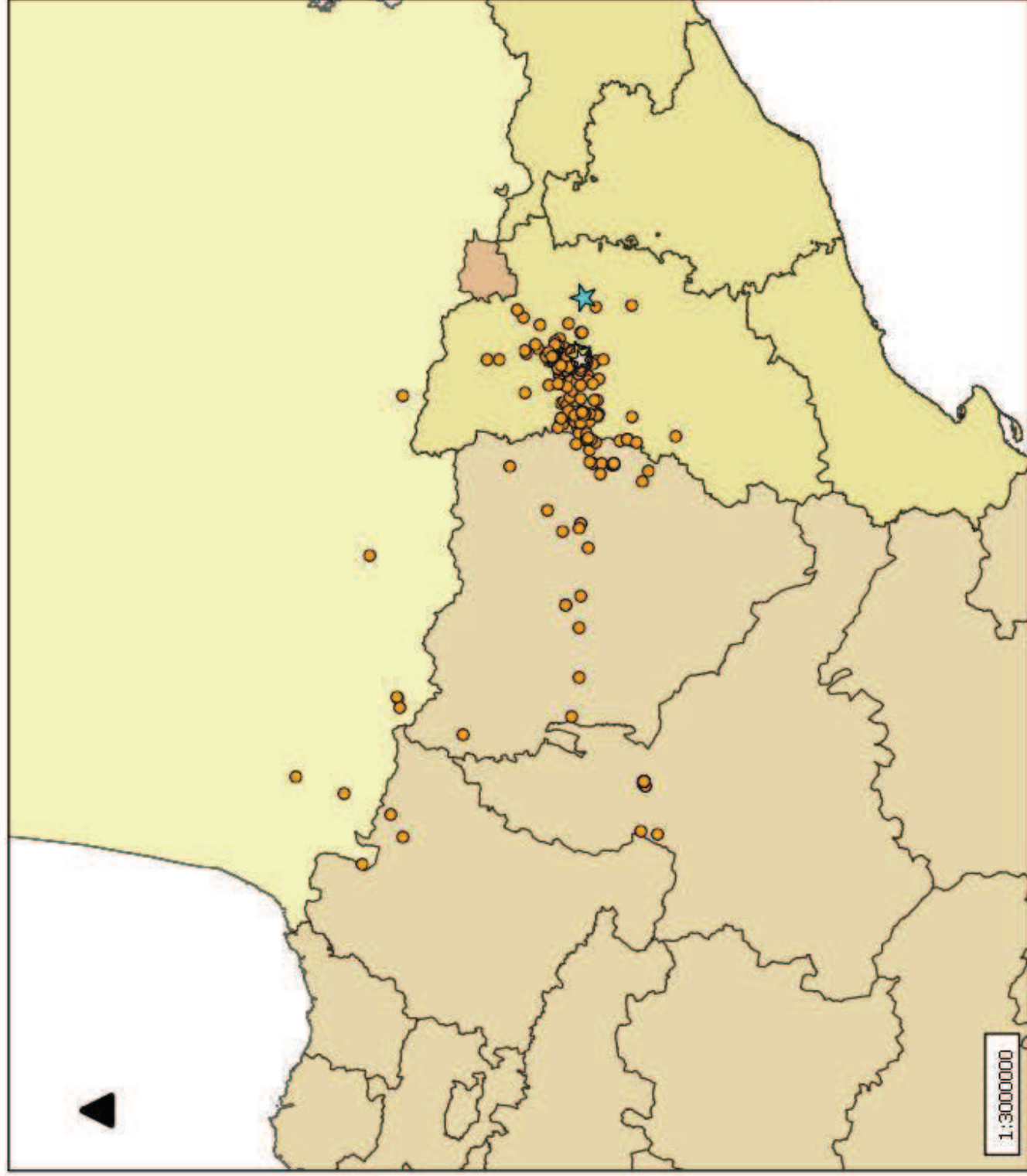


Proyecto de Reintroducción del Buitre negro en Catakunya\_2013

Nombre: BIC  
 Sex: Hembra  
 Año nac: 2013  
 Padres: Bruna&Corneli  
 Origen: Boumort  
 Loc. Liberación: Natural  
 Fecha lib: jul\_2013  
 ID(GPS): 78056  
 VHF(MHz): -  
 PVC: AM[MP0]  
 Anilla: Aranzadi J 1501

- BIC ●
- Boumort ●
- ★ Alinya
- ★ Cal Hortó
- ★ RNC Boumort





**Proyecto de Reintroducción del Buitre negro en Catalunya\_2013**

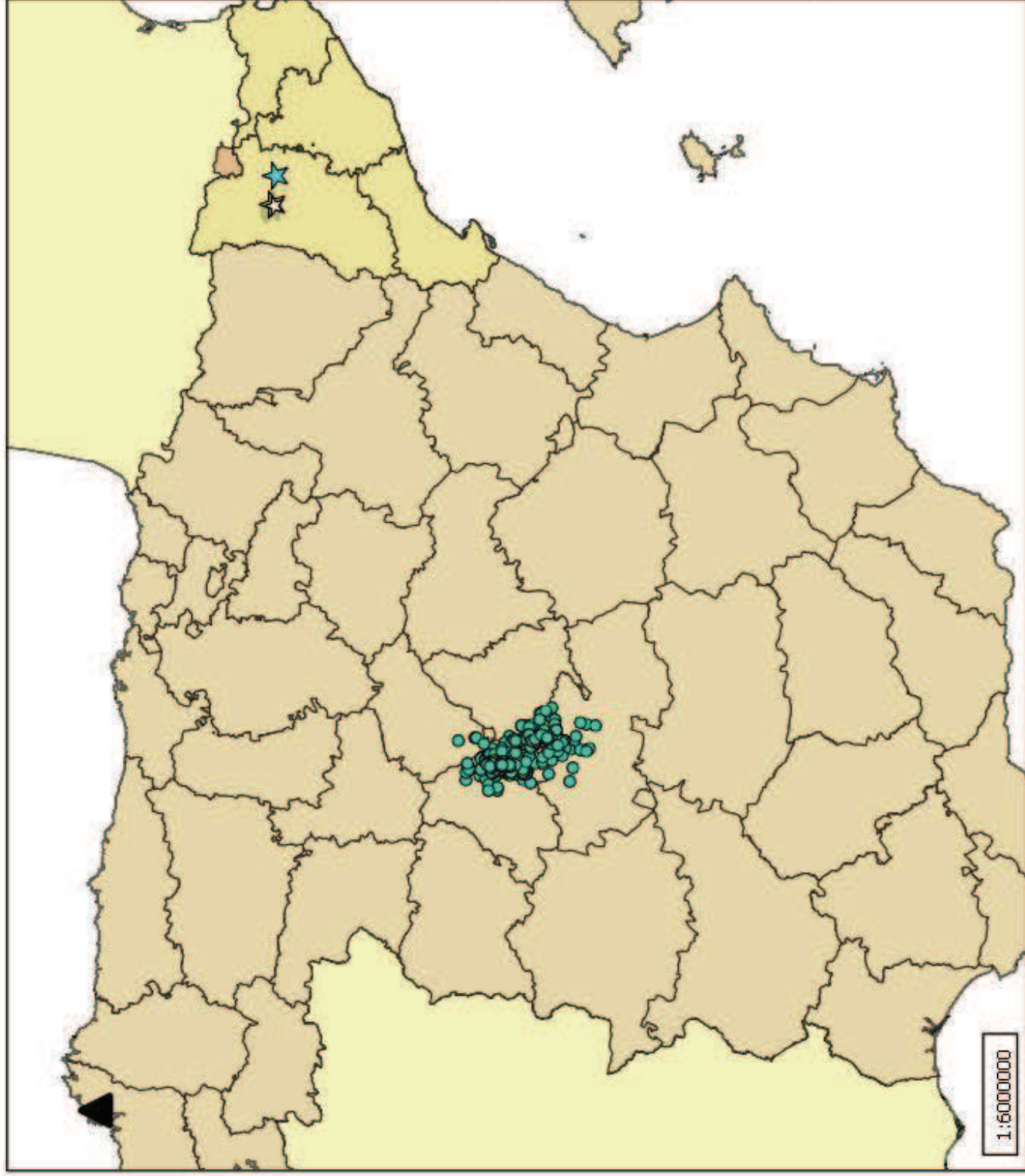
**Nombre:** COMA  
**Sex:** Hembra  
**Año nac:** 2012  
**Padres:** Perla&Portell  
**Origen:** Boumort  
**Loc. Liberación:** Natural  
**Fecha lib:** jun\_2012  
**ID(GPS):** 107940  
**VHF(MHz):** -  
**PVC:** AM[9V7]  
**Anilla:** 1109068

- COMA ●
- Boumort ★
- Alinya ★
- Cal Hortó ★
- RNC Boumort



Proyecto financiado por:





Proyecto de Reintroducción del Buitre negro en Catalunya\_2013

Nombre: COMÍ

Sex: Macho

Año nac: 2007

Origen: Madrid

Loc. Liberación:

Boumort

Fecha lib: nov\_2011

ID(GPS): 107941

VHF(MHz): 147.299

PVC: AM[GLX]

Anilla: 1106251

COMÍ

Boumort

Alinya

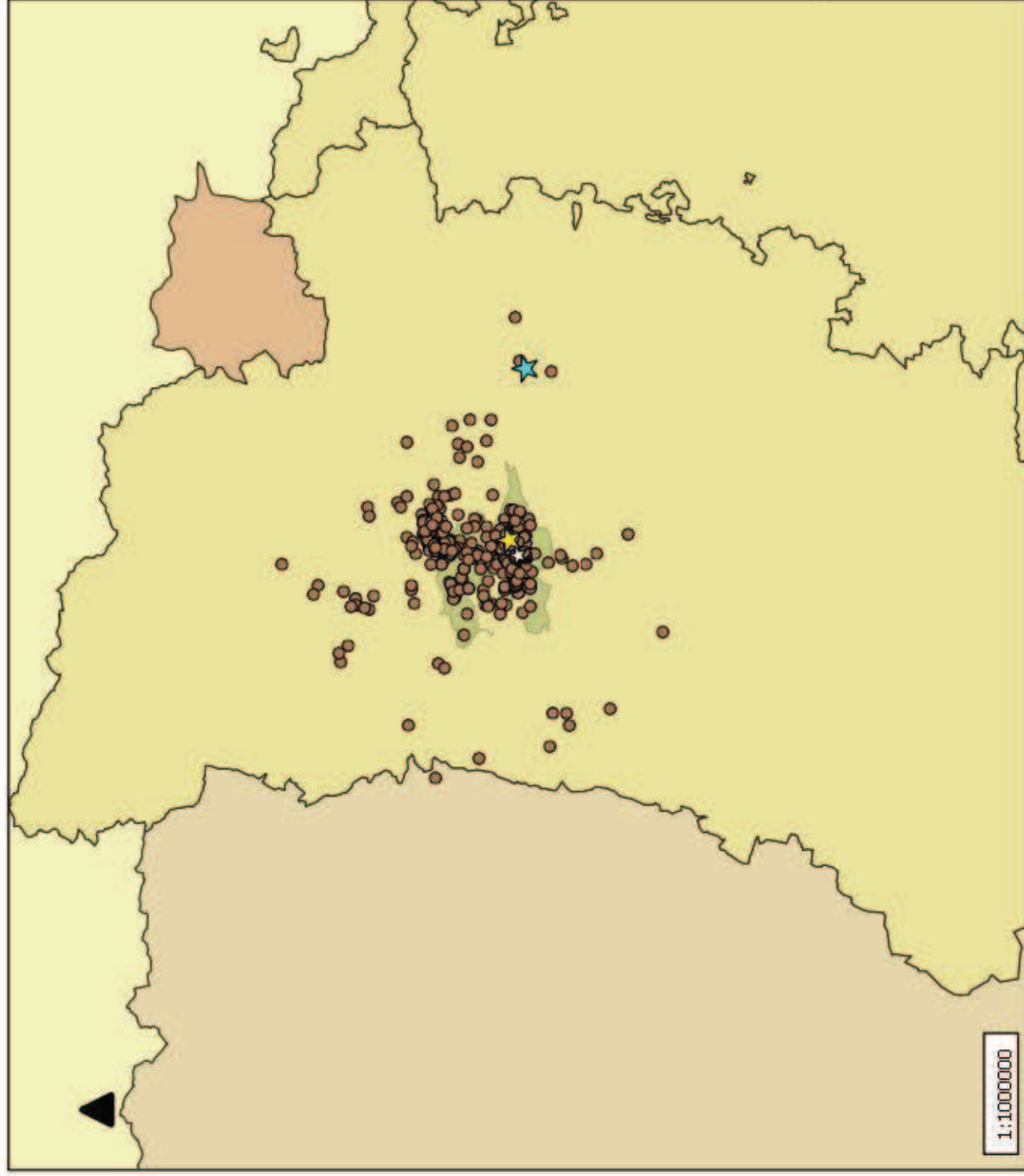
Cal Hortó

RNC Boumort



Proyecto financiado por:





Proyecto de Reintroducción del Buitre negro en Catalunya\_2013

Nombre: FOIX  
Sex: Macho  
Año nac: 2011  
Origen: Barcelona  
Loc. Liberación: Boumort  
Fecha lib: feb\_2013  
ID(GPS): 68275  
VHF (MHz): 147.192  
PVC: AM[9VT]  
Anilla: 1107479

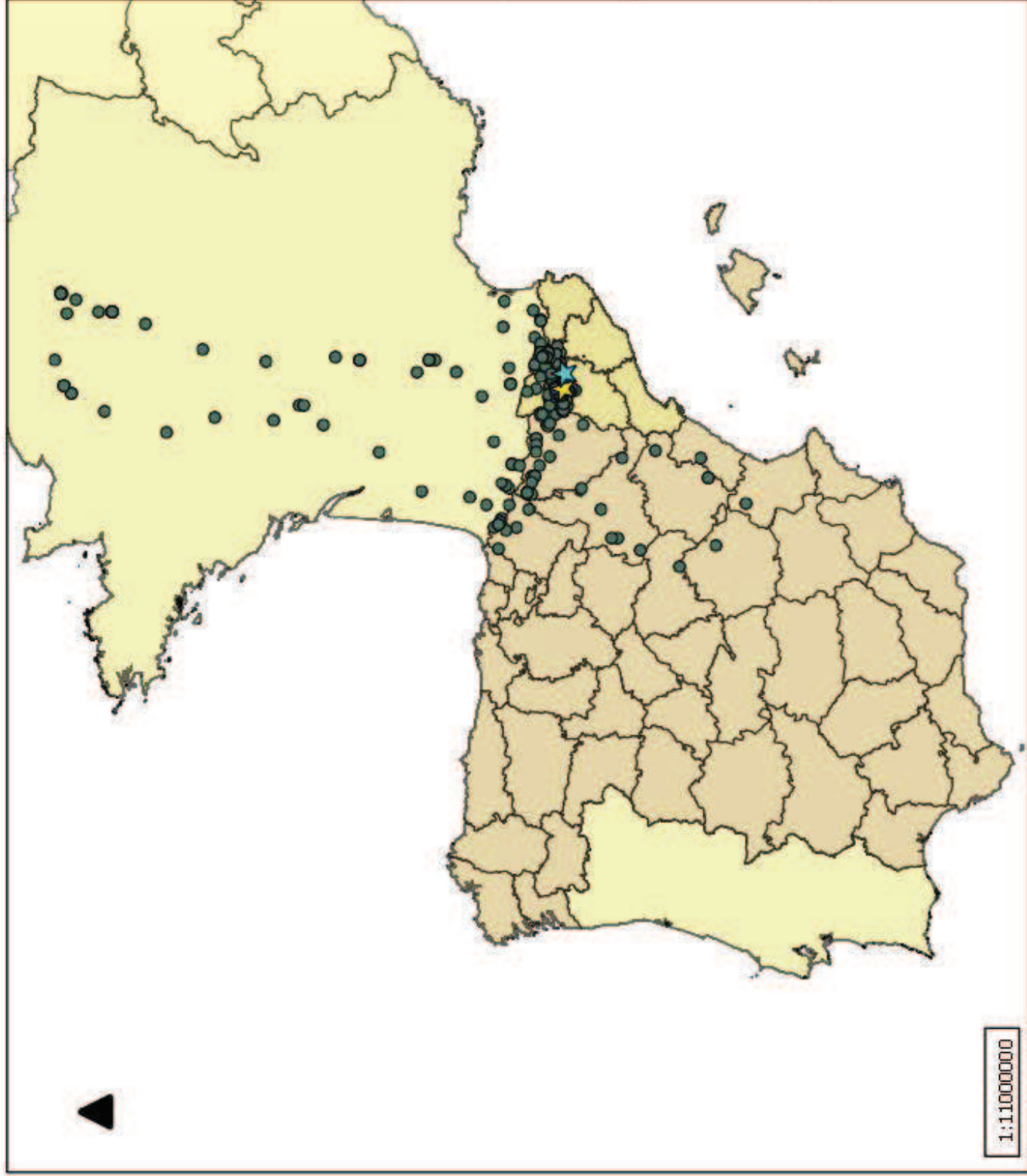
FOIX  
PAS Boumort  
PAS Alinyà  
Cal Hirtó  
RNC Boumort



Proyecto financiado por:







Proyecto de Reintroducción del Buitre negro en Catalunya\_2013

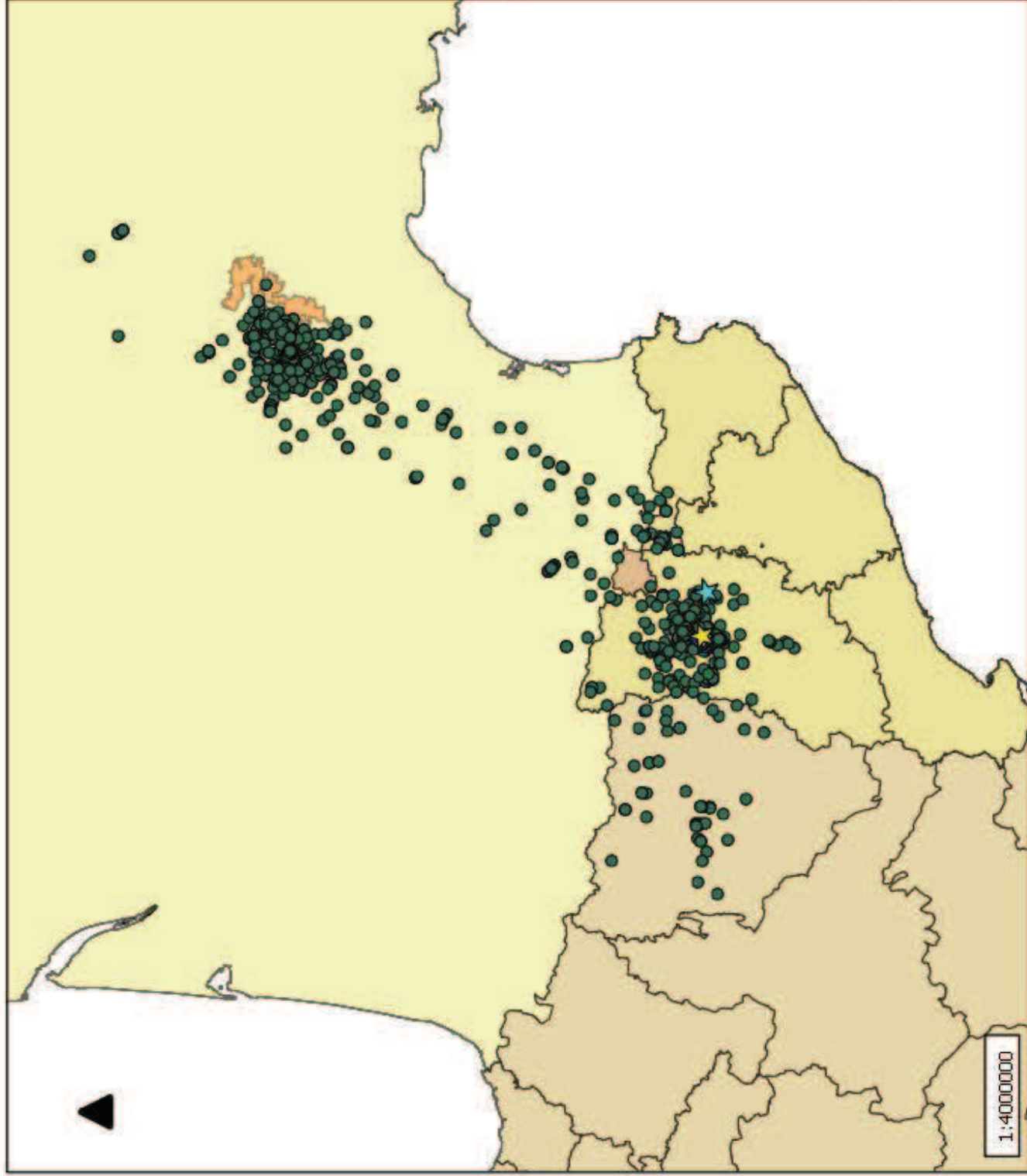
Nombre: GALA  
Sex: Hembra  
Año nac: 2010  
Loc. nac: Boumort  
Fecha vuelo: sep\_2010  
ID(GPS): 96414  
VHF(MHz): -  
PVC: AM[9WX]  
Anilla: 1109067

- GALA ●
- PAS Boumort ★
- PAS Alhaya ★
- Cal Hortó ★
- RNC Boumort ▭



Proyecto financiado por:

1:11000000



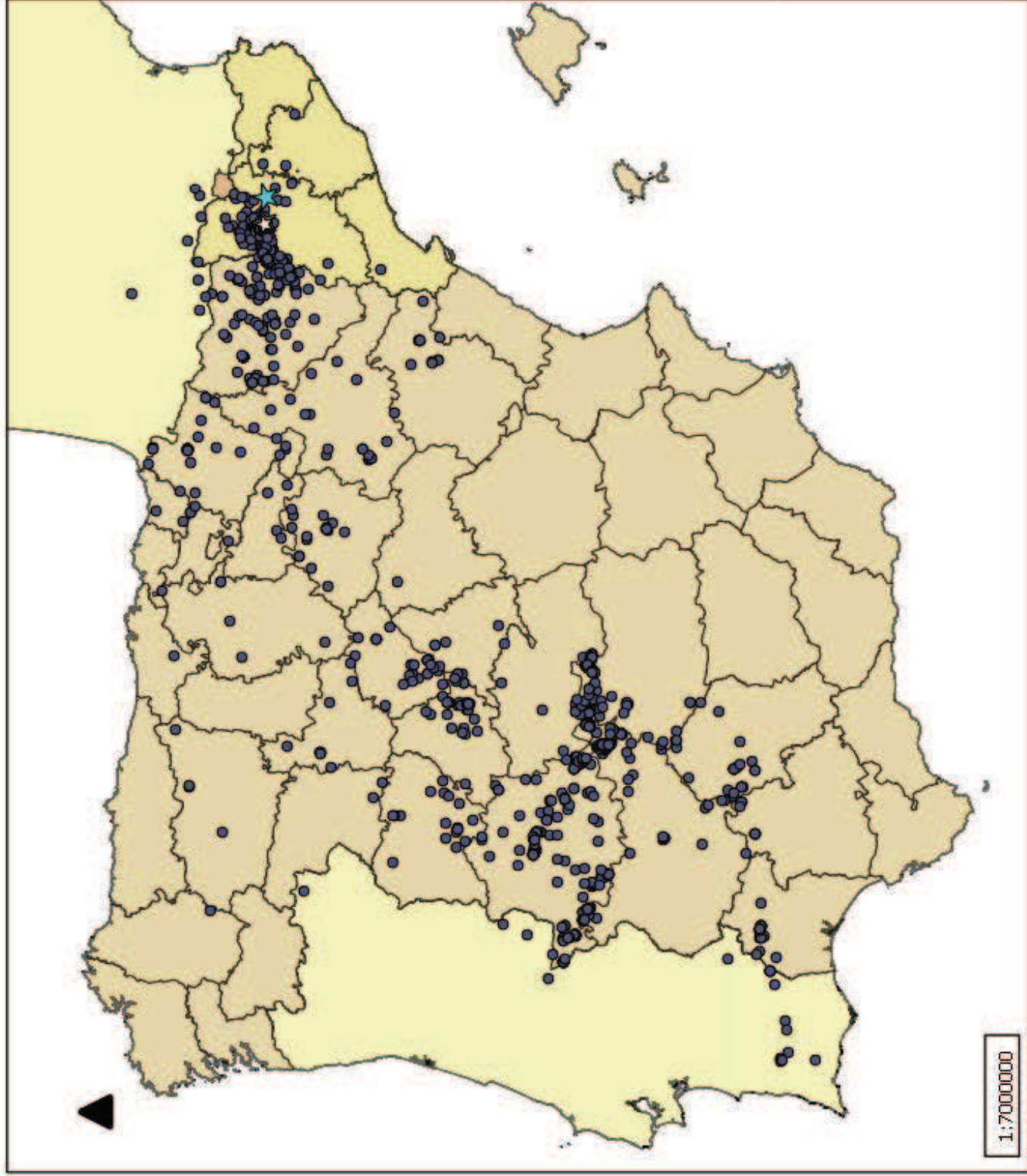
Proyecto de  
Reintroducción  
del Buitre negro en  
Catalunya\_2013

Nombre: GALLARDA  
Sex: Hembra  
Año nac: 2007  
Origen: Extremadura  
Fecha lib: mar\_2009  
ID(GPS): 91031  
VHF(MHz): -  
PVC: AM[8PP]  
Anilla: 1107772

- GALLARDA ●
- PAS Boumort ★
- PAS Alhaya ★
- Cal Hortó ★
- RNC Boumort ★
- Cevénnes ■



Proyecto financiado por:



Proyecto de  
Reintroducción  
del Buitre negro en  
Catalunya\_2013

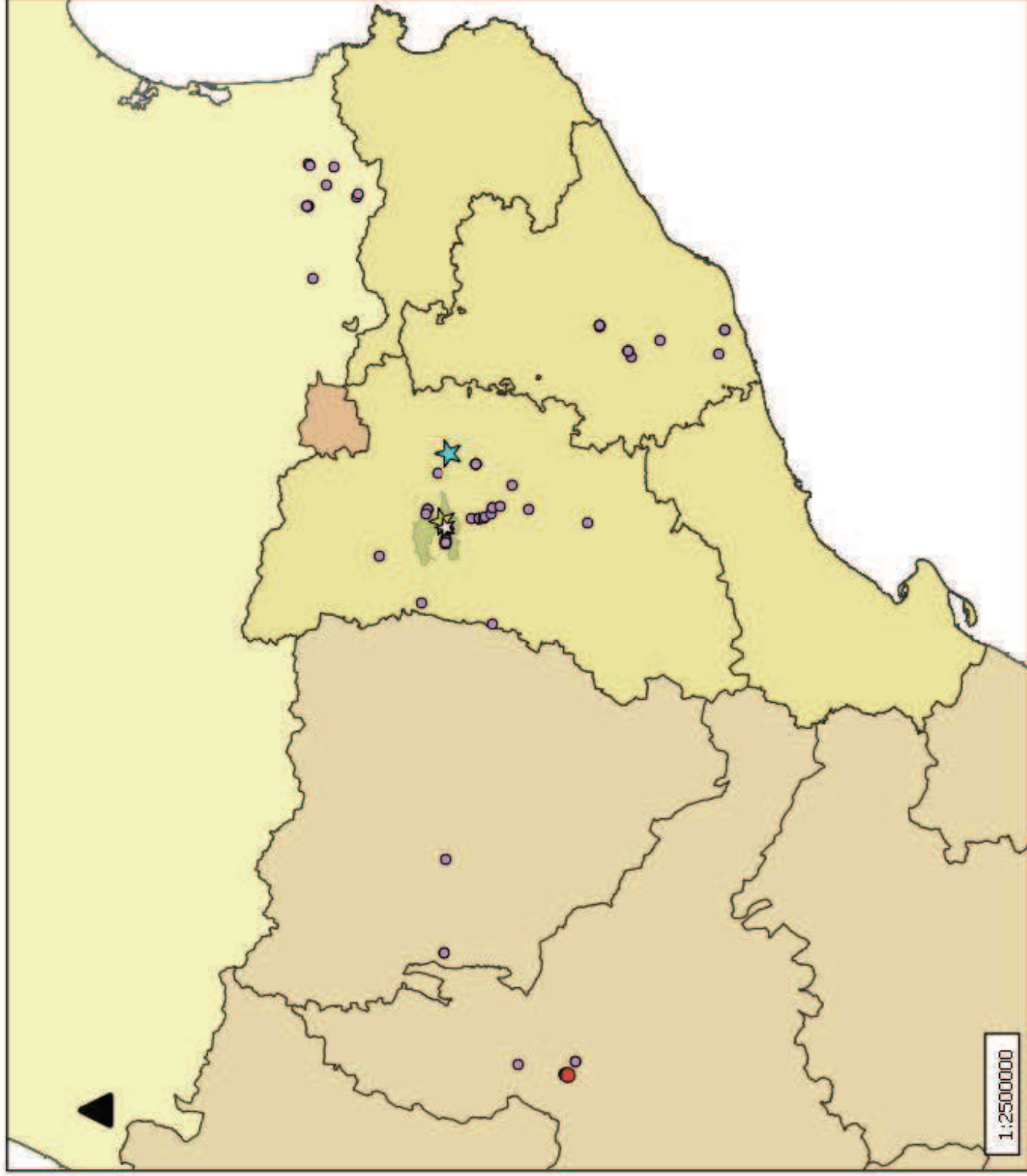
Nombre: GATA  
Sex: Hembra  
Año nac: 2007  
Origen: Extremadura  
Fecha lib: mar\_2009  
ID(GPS): 91034  
VHF(MHz): -  
PVC: AM[8R7]  
Anilla: 1107243

- GATA ●
- PAS Boumort ★
- PAS Alhaya ★
- Cal Hortó ☆



Proyecto financiado por:

1:7000000



Proyecto de  
Reintroducción  
del Buitre negro en  
Catalunya\_2013

Nombre: GREFA  
Sex: Hembra  
Año nac: 2011  
Origen: Extremadura  
Fecha lib: feb\_2013  
ID(GPS): 96046  
VHF(MHz): 147.349  
PVC: AM[9W/M]  
Anilla: 1110206

- GREFA
- dead (01.04.2013)
- PAS Boumort
- PAS Alhaya
- Cal Hortó
- RNC Boumort



Proyecto financiado por:



Proyecto de  
Reintroducción  
del Buitre negro en  
Catalunya\_2013

Nombre: GREVOL  
Sex: Macho  
Año nac: 2011  
Origen: Toledo  
Fecha lib: feb\_2013  
ID(GPS): 57794  
VHF(MHz): 147.133  
PVC: AM[9WV]  
Anilla: 1111313

GREVOL

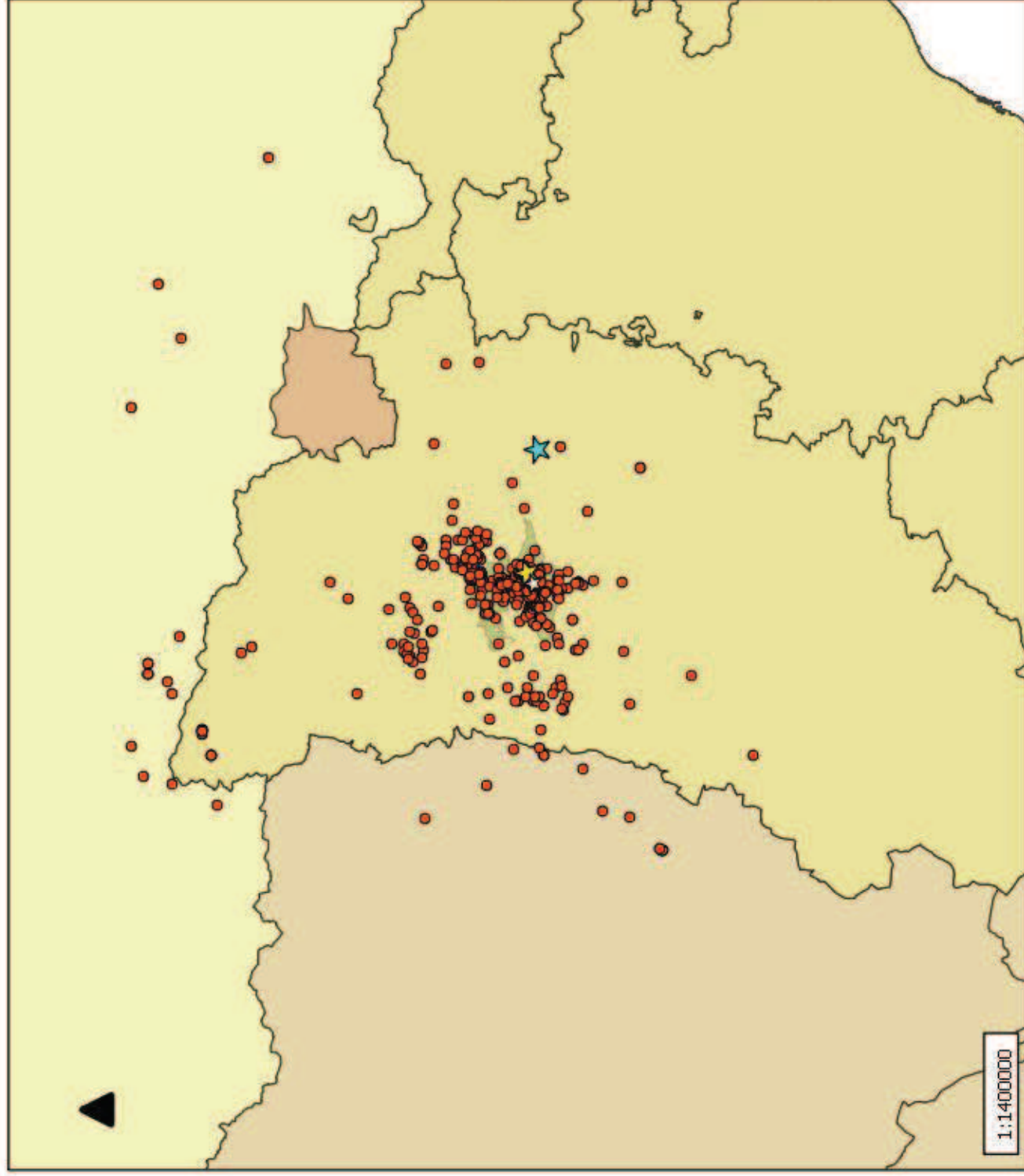
- PAS Baumart
- ★ Cal Hartó
- ☆ RNC Baumart



Proyecto financiado por:



1:156250



Proyecto de Reintroducción del Buitre negro en Catalunya\_2013

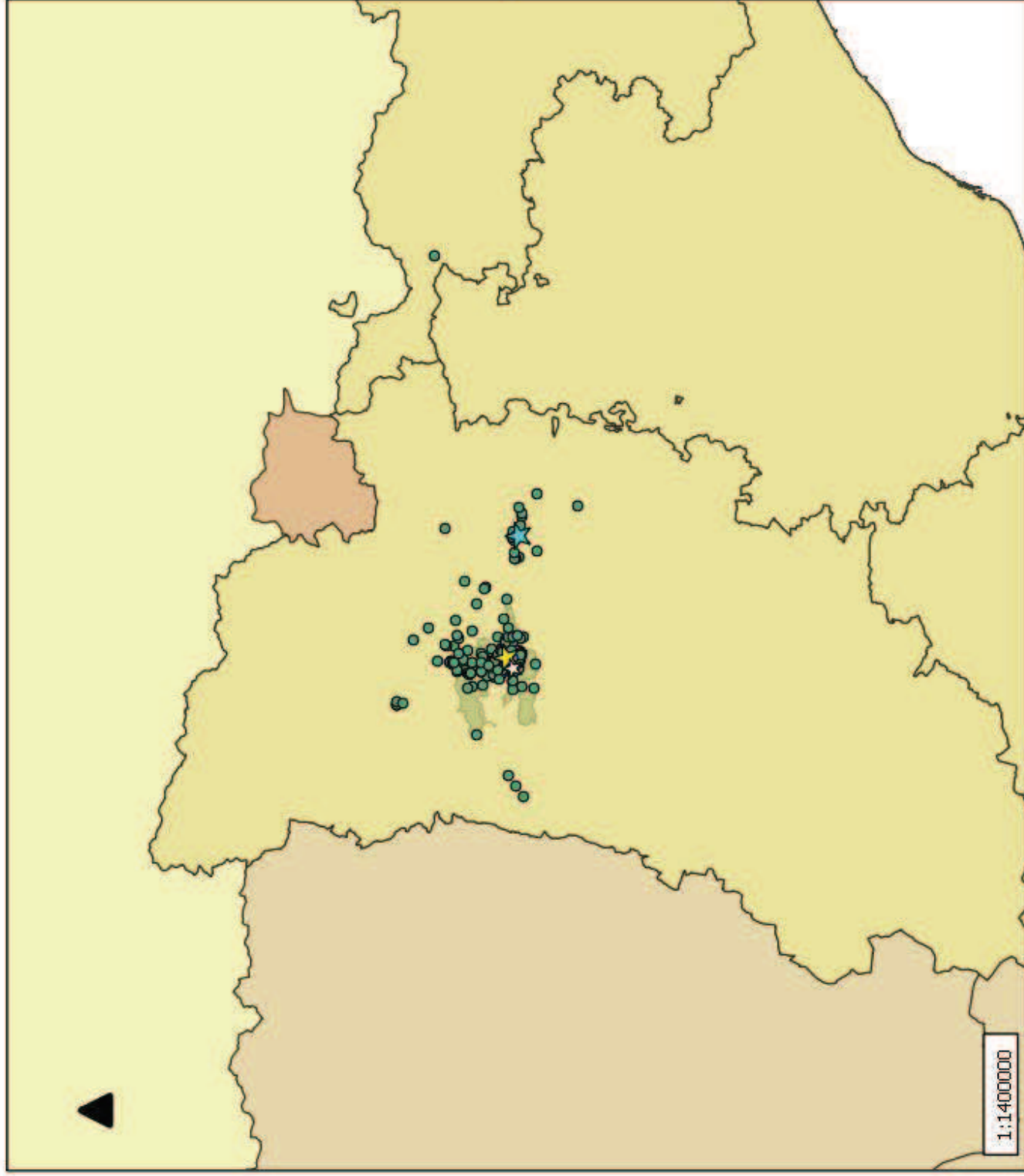
Nombre: HORNOS  
Sex: Macho  
Año nac: 2011  
Origen: Extremadura  
Fecha lib: feb\_2013  
ID(GPS): 107942  
VHF(MHz): 147.959  
PVC: AM[9WR]  
Anilla: 1108839

- HORNOS
- PAS Boumort
- Cal Hartó
- PAS Alinya
- RNC Boumort



Proyecto financiado por:

1:1400000



Proyecto de Reintroducción del Buitre negro en Catalunya\_2013

Nombre: MENTA  
Sex: Hembra  
Año nac: 2007  
Origen: Extremadura  
Fecha lib: mar\_2009  
ID(GPS): 91035  
VHF(MHz): -  
PVC: AM[8R4]  
Anilla: 1107244

MENTA

PAS Boumort



Cal Hortó



PAS Alhaya



RNC Boumort



Proyecto financiado por:



Proyecto de  
Reintroducción  
del Buitre negro en  
Catalunya\_2013

Nombre: MIM  
Sex: Macho  
Año nac: 2013  
Loc. nac: Boumort  
Fecha marc: jun\_2013  
ID(GPS): 107939  
VHF(MHz): 147.643  
PVC: A[E45]  
Anilla: -

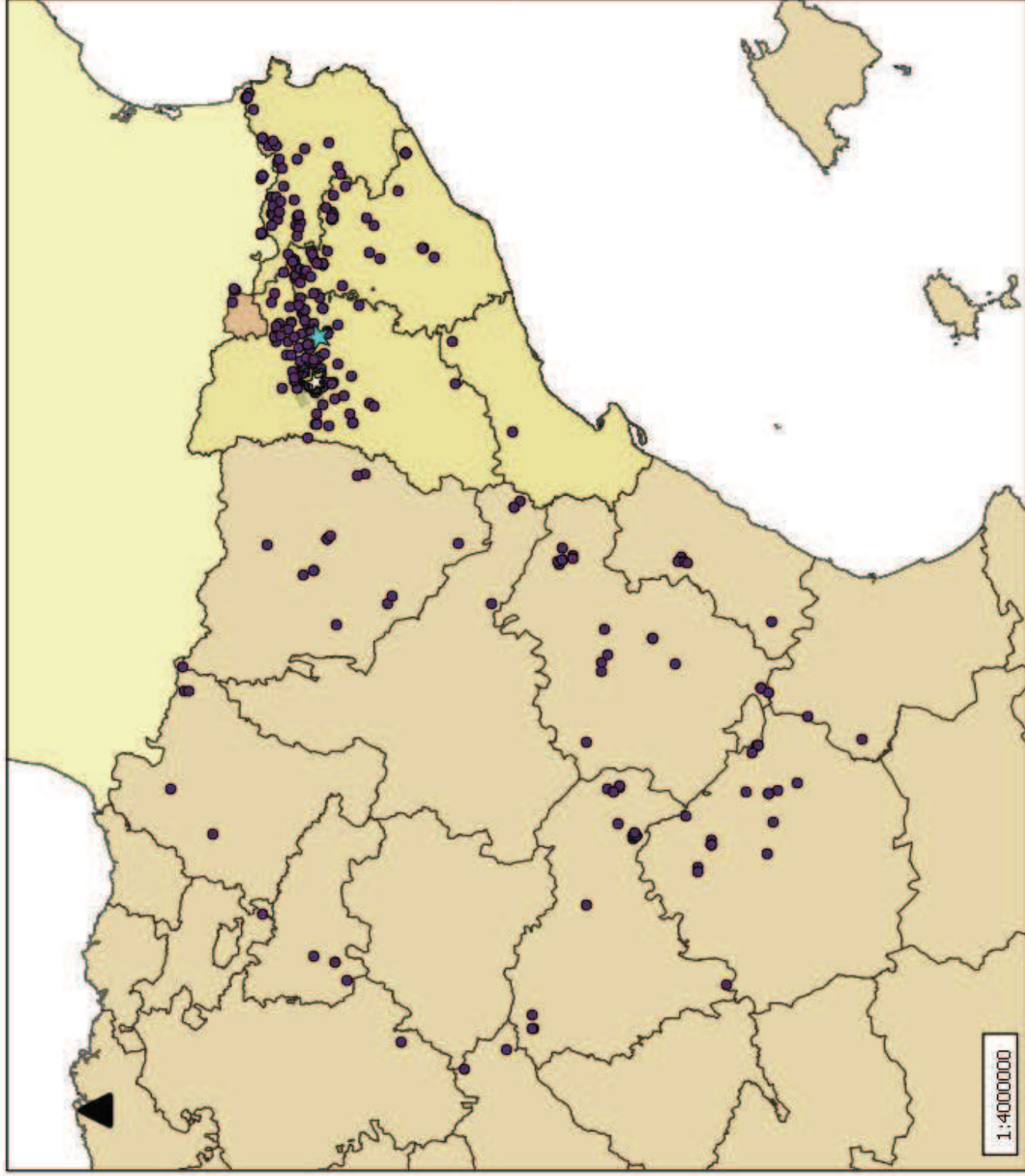
- MIM
- PAS Boumort
- ★ Cal Hortó
- ☆ RNC Boumort

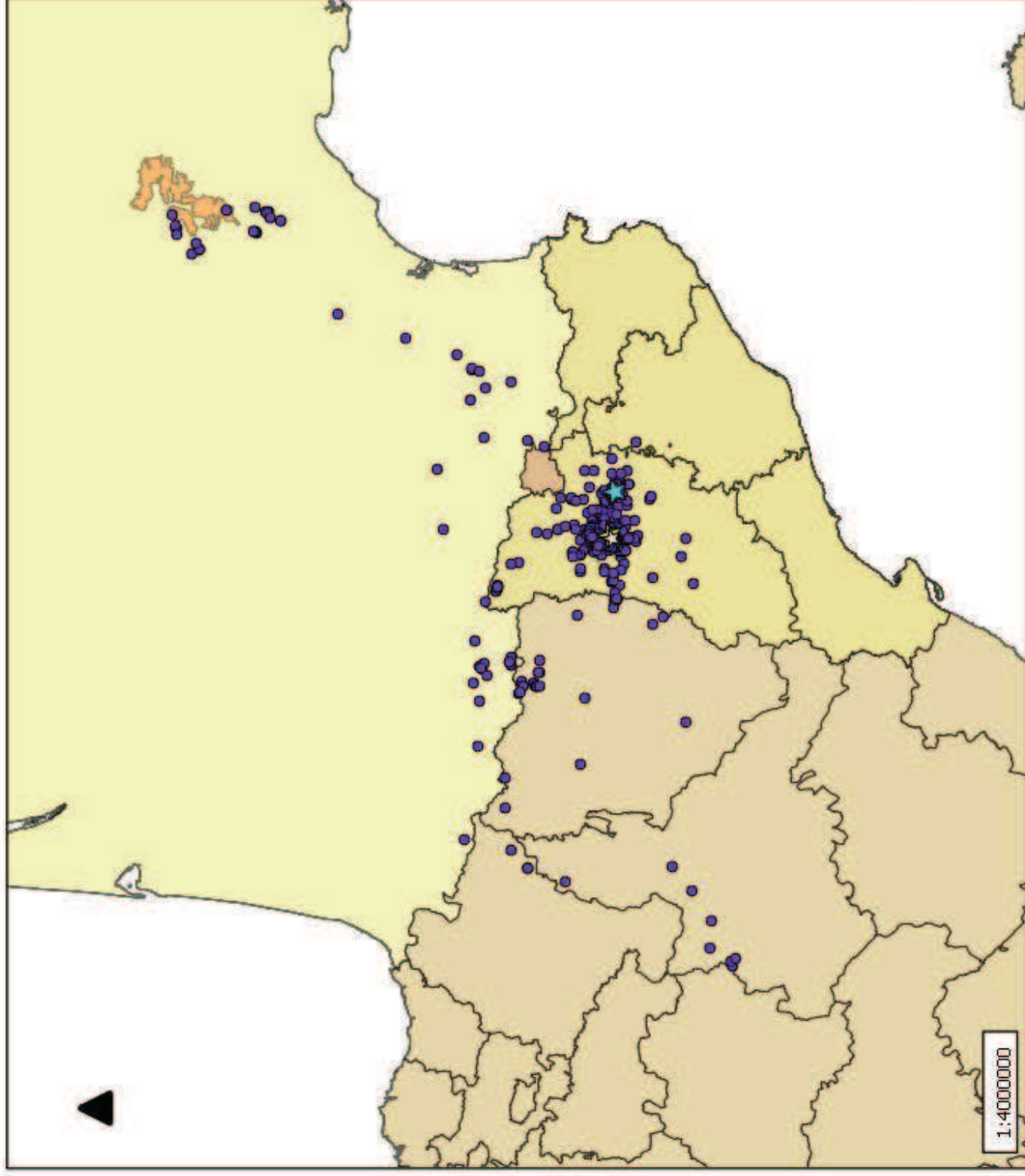


Proyecto financiado por:

1:250000







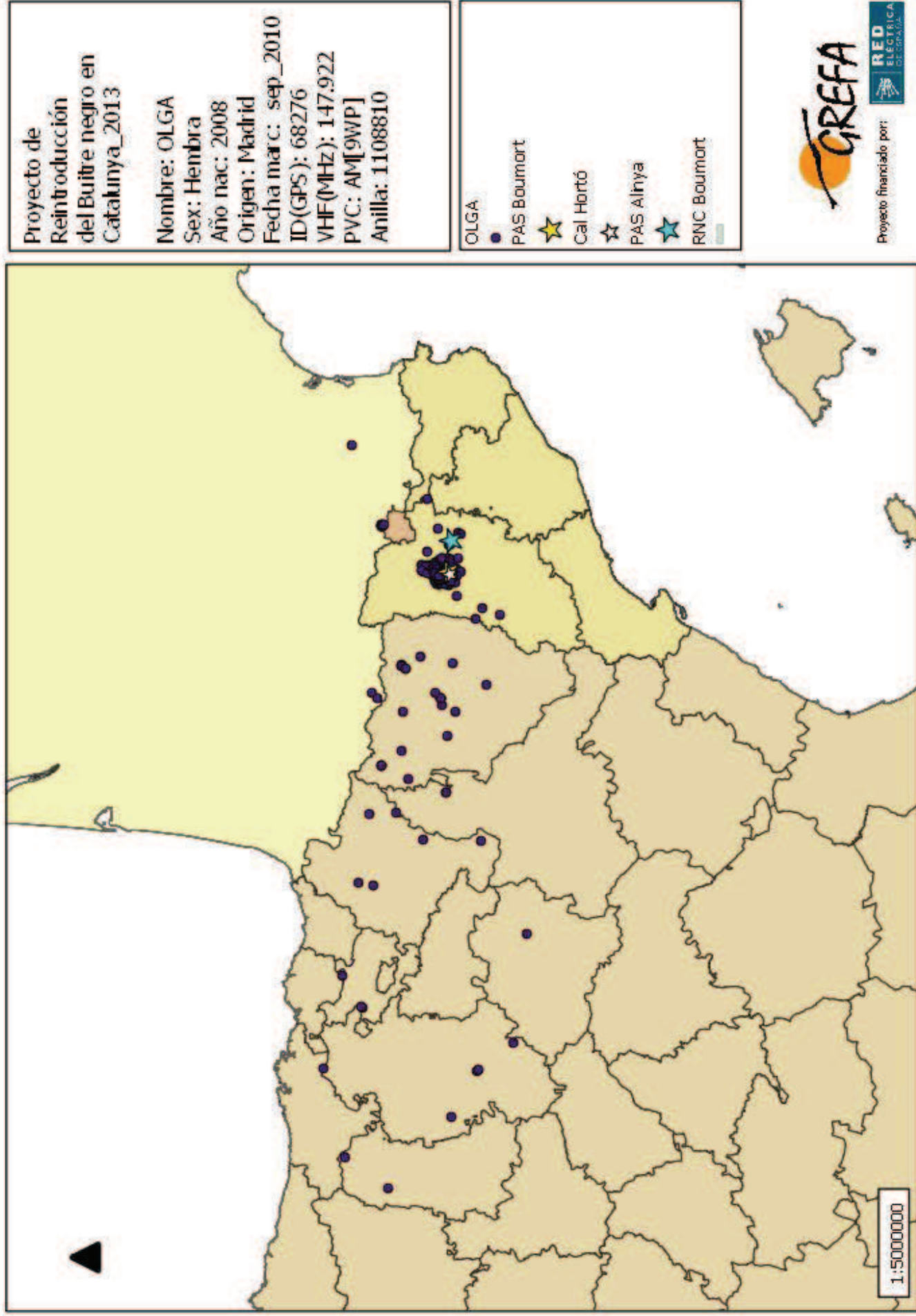
Proyecto de  
Reintroducción  
del Buitre negro en  
Catalunya\_2013

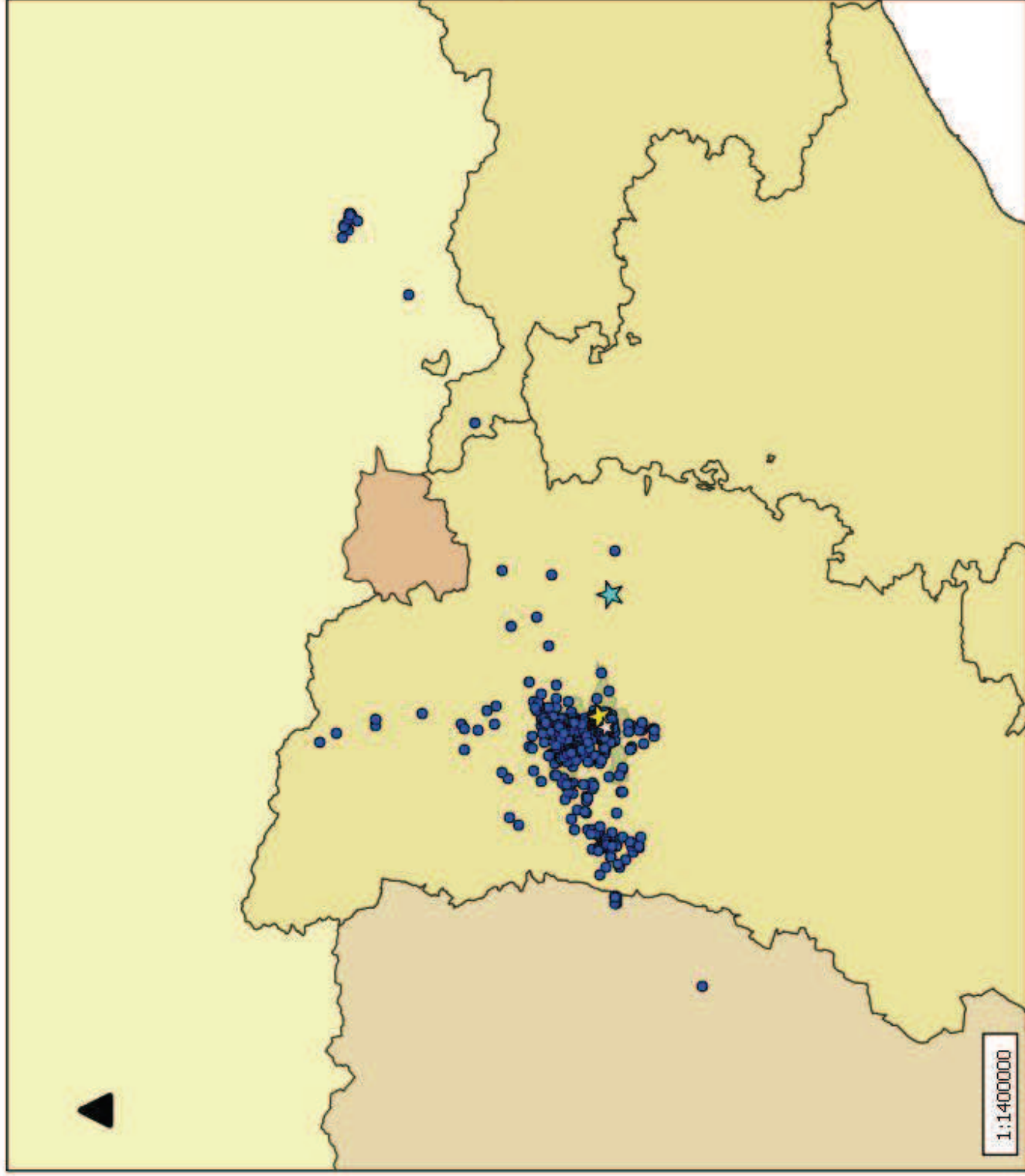
Nombre: MUGA  
Sex: Hembra  
Año nac: 2007  
Origen: Extremadura  
Fecha marc: mar\_2009  
ID(GPS): 91032  
VHF(MHz): -  
PVC: AM[8PV]  
Anilla: 1107573

- MUGA ●
- PAS Boumort ★
- Cal Hortó ☆
- PAS Alhaya ★
- RNC Boumort ■
- Cevéennes ■



Proyecto financiado por:





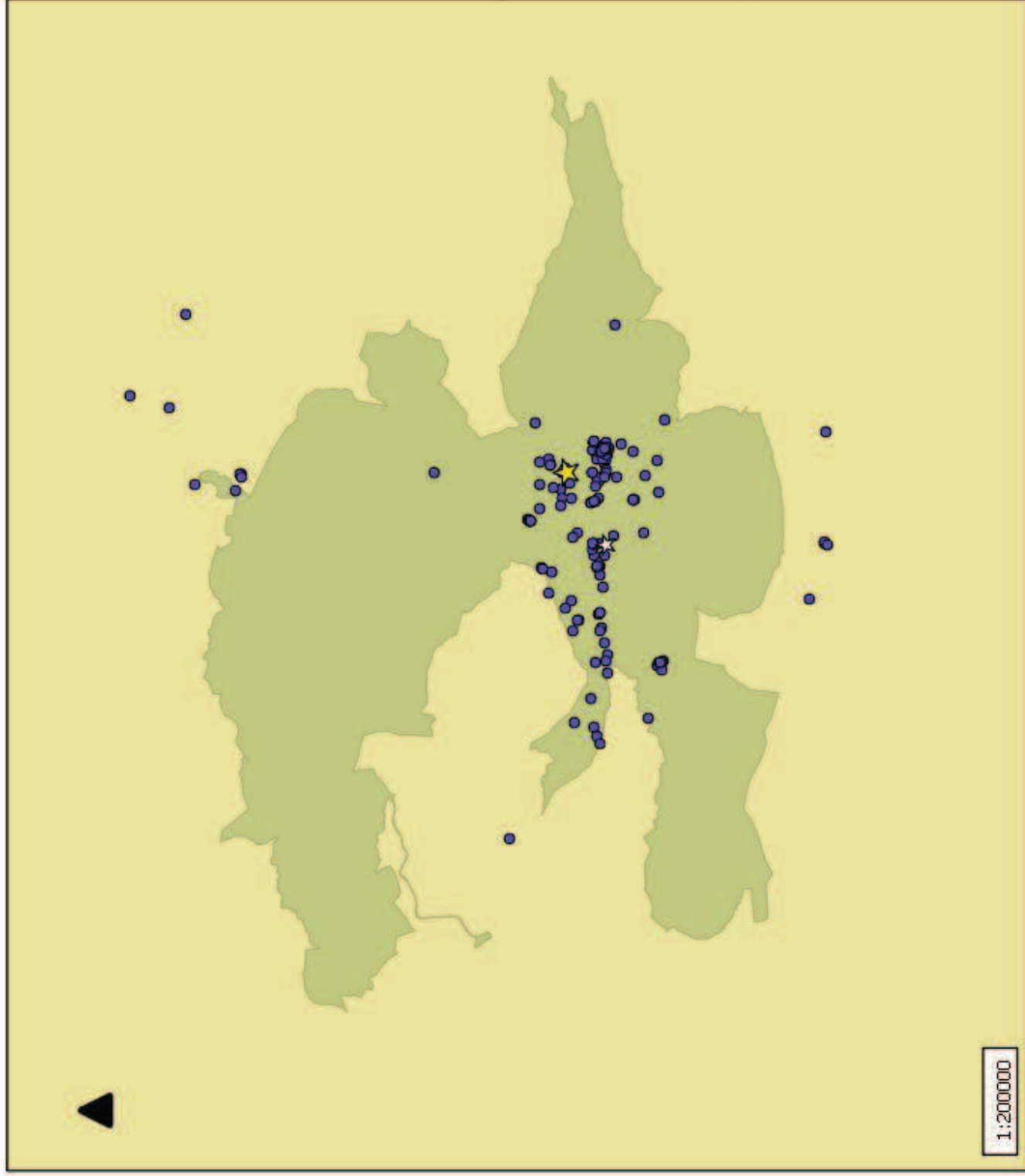
Proyecto de  
Reintroducción  
del Buitre negro en  
Catalunya\_2013

Nombre: ORIOL  
Sex: Macho  
Año nac: 2009  
Origen: Extremadura  
Fecha marc: sep\_2010  
ID(GPS): 68281  
VHF(MHz): 147.813  
PVC: AM[9W/J]  
Anilla: 1108808

- ORIOL
- PAS Boumort
  - ★ Cal Hortó
  - ★ PAS Alnya
  - RNC Boumort



Proyecto financiado por:



Proyecto de  
Reintroducción  
del Buitre negro en  
Catalunya\_2013

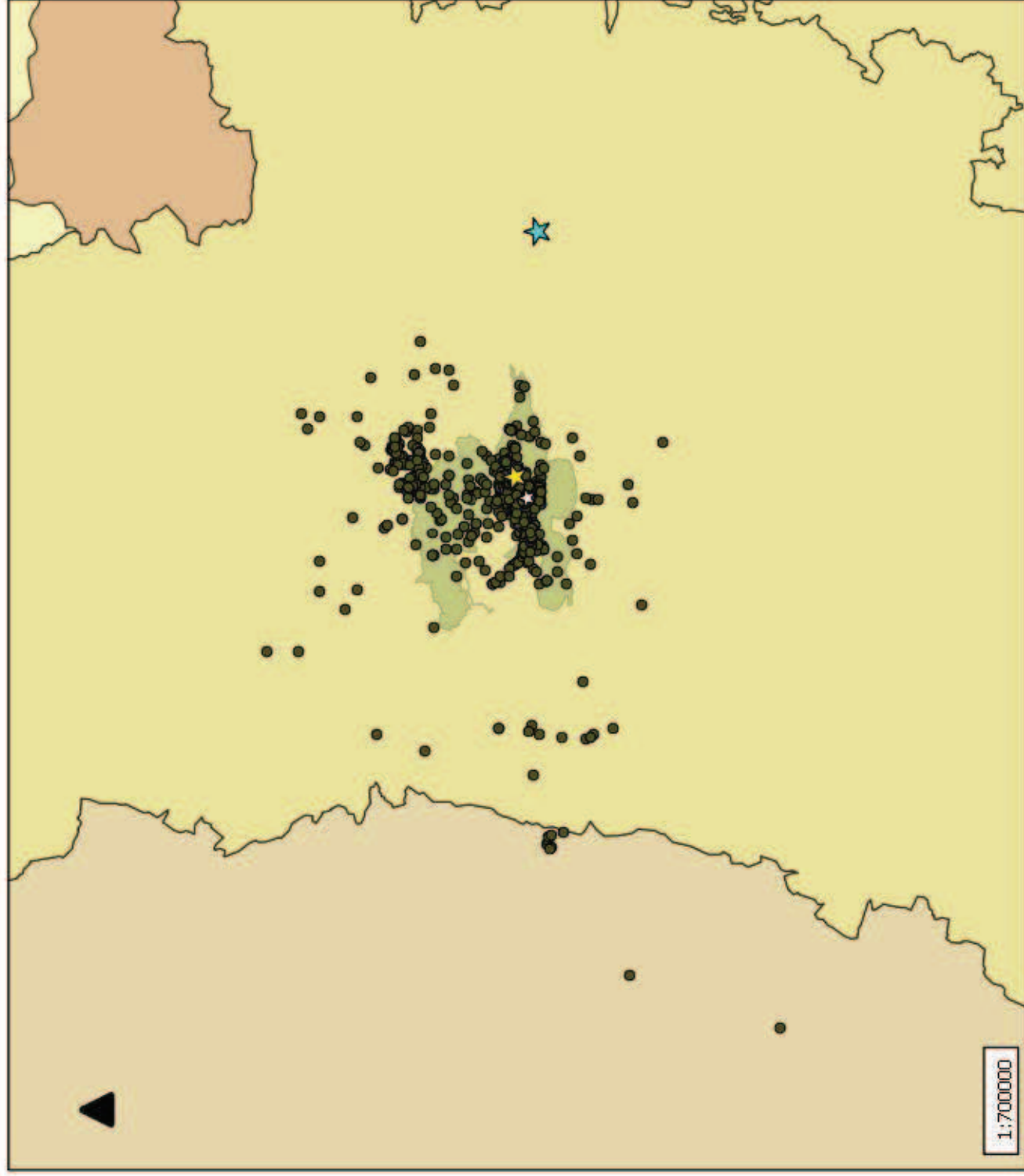
Nombre: PIP  
Sex: Macho  
Año nac: 2013  
Loc. nac: Boumort  
Fecha marc: jun\_2013  
ID(GPS): 57794  
VHF(MHz): 147.133  
PVC: A[E46]  
Anilla: -

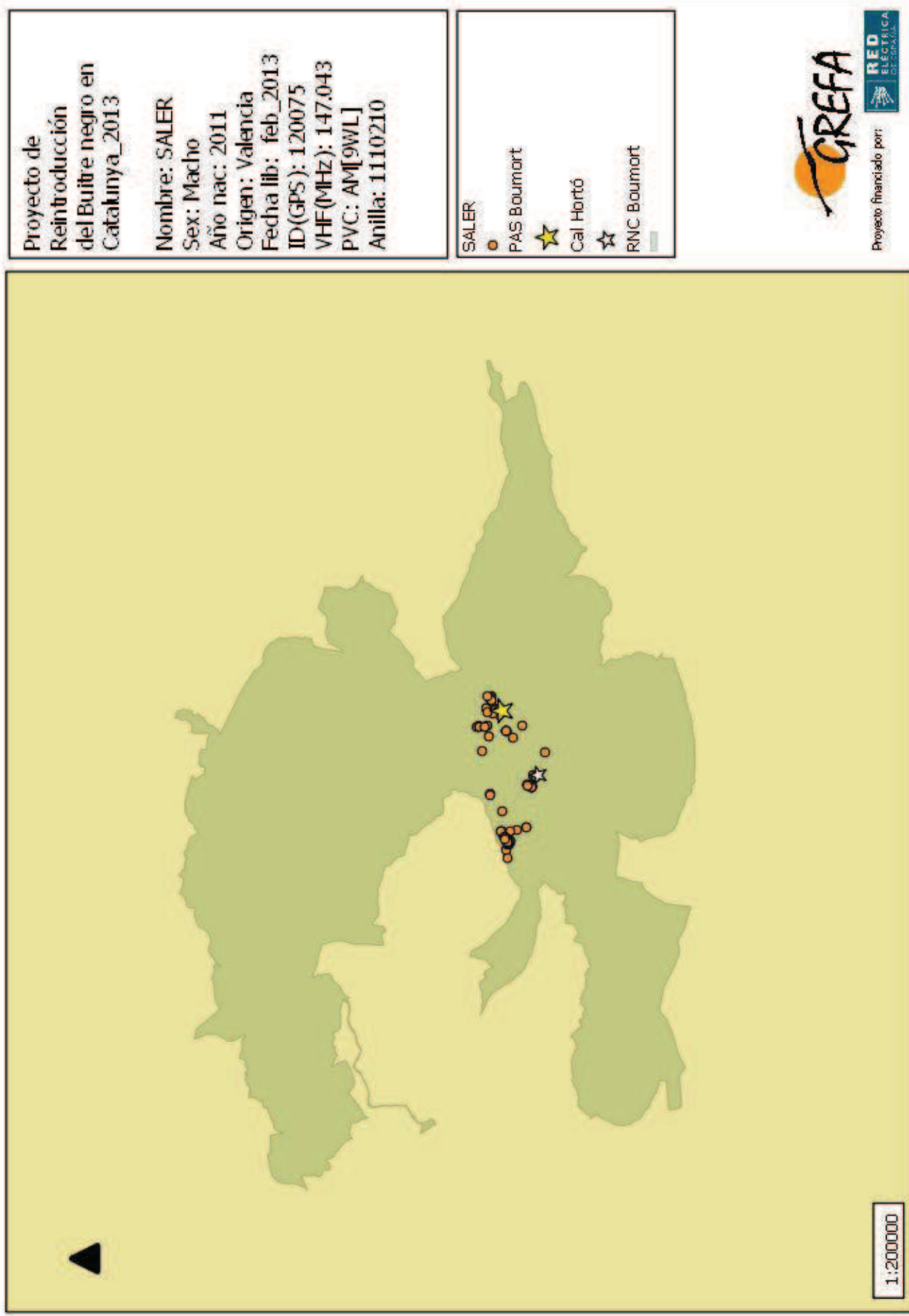
- PIP
- PAS Boumort
  - ★ Cal Hortó
  - ☆ RNC Boumort

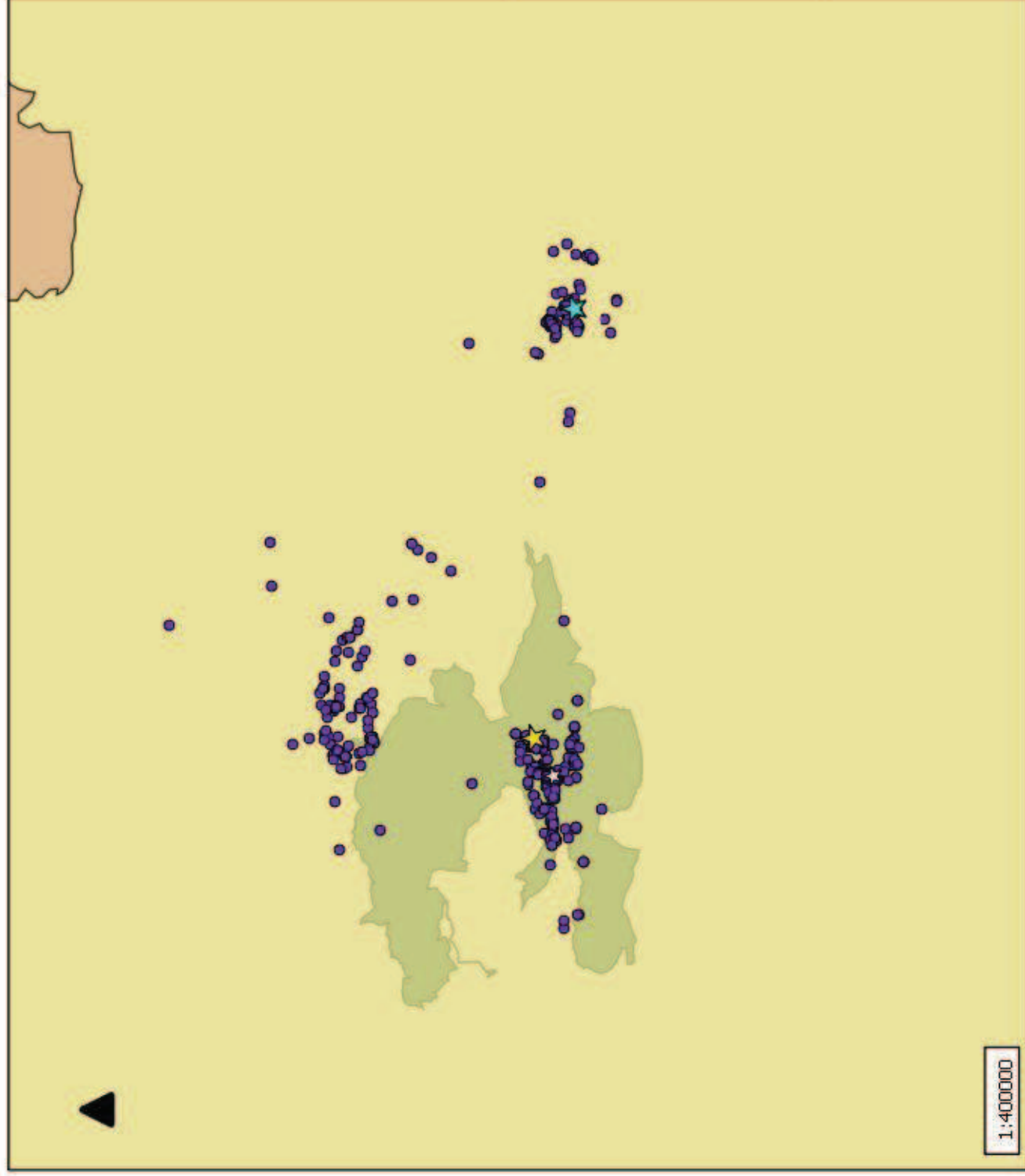


Proyecto financiado por:

1:200000











Proyecto de  
 Reintroducción  
 del Buitre negro en  
 Catalunya\_2013  
  
 Nombre: TRENCA  
 Sex: Hembra  
 Año nac: 2011  
 Origen: Extremadura  
 Fecha lib: feb\_2013  
 ID(GPS): 107939  
 VHF (MHz): 147.643  
 PVC: AM[9W4]  
 Anilla: 1110207

TRENCA  
 ● dead (08.04.2013)  
 ● PAS Boumort  
 ★ Cal Hortó  
 ★ PAS Alinya  
 ★ RNC Boumort

